論文・抄録

ORIGINAL ARTICLE

Transient epileptic amnesia complex syndrome and epileptic cognitive impairment resembling Alzheimer' s disease: Should the concept of epilepsy be extended?

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ABSTRACT

Background:
Transient epileptic amnesia (TEA) is a special type of mesial temporal lobe epilepsy, whose main symptom is recurrent amnesia attacks. Patients with TEA often demonstrate two other types of memory symptoms: accelerated long-term forgetting (ALF) and autobiographical amnesia (AbA). In our previous reports, we presented two clinical cases in which the patients showed symptoms of ALF and/or AbA without suffering any type of epileptic seizure, including TEA attacks. Based on these cases and a literature search, we proposed a new clinical entity, which we named 'transient epileptic amnesia complex syndrome (TEACS)' . We also proposed a new type of neurocognitive disorder, which we named 'epileptic cognitive impairment resembling Alzheimer' s disease (ECI-A)' .

Methods and Results:
The clinical profiles and characteristics of three cases of TEACS and one case of ECI-A are presented. Based on the clinical courses of these cases, pathological hypotheses regarding TEACS and ECI-A are discussed, and the importance of clearly recognizing a new concept in epileptology is emphasized.

Discussion:
We consider that at least two non-paroxysmal and chronic epilepsy-related disorders (TEACS and ECI-A) exist. The two disorders are considered to be caused by continual excessive neuronal discharges that are not sufficient to give rise to clinical seizures. The establishment of these new entities would open up therapeutic possibilities for such non-paroxysmal and chronic epilepsy-related disorders.

Keywords:
accelerated long-term forgetting, epilepsy, epileptic cognitive impairment resembling Alzheimer' s disease, transient epileptic amnesia, transient epileptic amnesia complex syndrome

INTRODUCTION

Transient epileptic amnesia (TEA) is a special type of mesial temporal lobe epilepsy, whose main symptom is recurrent amnesia attacks. In the 1990s, Hodges&Warlow, Kapur, and Zeman et al. described the clinical features of TEA.[1-3] Zeman et al. proposed the following diagnostic criteria for TEA: (1) recurrent, witnessed episodes of amnesia (TEA attacks); (2) other cognitive functions remain intact during attacks; and (3) evidence of epilepsy. Such evidence can be provided by (a) electroencephalography (EEG), (b) the co-occurrence of other types of seizure, or (c) a clear response to antiseizure medication (ASM), or a combination of these three factors.[3] TEA attacks typically last for minutes to hours. Patients with TEA often demonstrate two other types of memory symptoms: accelerated long-term forgetting (ALF) and autobiographical amnesia (AbA).[4,5] Both ALF and AbA are persistent memory disorders, but TEA attacks are not.

In our previous reports, we presented two clinical cases in which the patients showed symptoms of ALF and/or AbA without suffering any type of epileptic seizure, including TEA attacks.[6-8] Based on these cases and a literature search, we proposed a new clinical entity, which we named 'transient epileptic amnesia complex syndrome (TEACS)' , and diagnostic criteria for the condition (Table 1).[7,9] In these reports, we suggested that continual epileptiform discharges by the neurons in the temporal lobes that are not sufficient to give rise to clinical seizures may cause ALF and AbA.[6-10]

In addition, in 2021 we also proposed a new type of neurocognitive disorder, which we named 'epileptic cognitive impairment resembling Alzheimer' s disease (ECI-A)' .[11] This condition was first described in the literature in 2009 by Ito M. et al. using the term 'epilepsy-derived memory impairment resembling Alzheimer' s disease' .[12] The patients described in the latter report exhibited recent memory impairment; behavioral and psychological symptoms (BPSD); and a reduced ability to perform activities of daily living (ADL), all of which resolved after the administration of ASM. Ito et al. speculated that abnormally excessive neuronal discharges that were not sufficient to give rise to clinical seizures may have caused temporal lobe dysfunction and propagated to the remote areas of the brain, leading to chronic executive dysfunction.[12] About ten years later, we experienced a few similar cases, in which the patients displayed not only memory impairment, but also other symptoms, such as BPSD and a decreased ability to perform ADL.[9] We considered that the term 'cognitive impairment' was more appropriate than 'memory impairment' for such cases. Therefore, we proposed that this condition should be called ECI-A. Here, we propose diagnostic criteria for ECI-A for the first time (Table 2) and would like to emphasize that this condition can also occur in the absence of epileptic seizures, as is the case for TEACS.

METHODS

Clinical summaries of two TEACS cases we experienced (Cases A and B) are presented.[6-9] In addition, the clinical profiles of our patients (Cases A and B) and a patient with TEACS whose case was described by Hornberger et al.[13] are presented. Furthermore, those of a representative case of ECI-A (Case C) are also presented.[11] Finally, we discuss the concept of 'epilepsy' based on these cases of these two new conditions.

Informed consent to publish the patients' clinical information was obtained from the patients and their families. The study protocol was approved by the ethics committee of Kamiiida Daiichi General Hospital (Nagoya, Japan).

RESULTS (CASE PRESENTATION)

Summaries of two cases of TEACS (Cases A and B) and a case of ECI-A (Case C) are presented below. The clinical profiles and characteristics of three cases of TEACS are shown in Table 3. The clinical profile and characteristics of a case of ECI-A (Case C) are also shown in Table 4. More detailed data for these cases was provided in our previous papers.[6-11]

Case A (cited from UKAI et al.,[6,9] partially modified and simplified)
A female in her late 60s attended our memory clinic in 200X. She stated that her memory had become faulty about three years earlier, and she had forgotten many actual events, such as having lunch with friends a few weeks ago and traveling with a friend a few months ago. In 200X+1, she had experienced two episodes of loss of consciousness within a short period. EEG showed independent sharp waves originating in the bilateral temporal regions. The administration of ASM resulted in the amelioration of her anterograde amnesia, which was confirmed by questioning the patient and her family about life events that had occurred since the start of the ASM treatment. She was diagnosed with TEA with ALF and focal impaired awareness seizures (FIAS).

Case B (cited from UKAI et al.[7-9], partially modified and simplified)
A male in his early 60s attended our memory clinic with his wife in 200X. He said that his memory had become faulty about four years earlier. He stated that he had forgotten many events, such as traveling with his wife a few months earlier, undergoing surgery about two years earlier, and the wedding ceremony of his daughter about eleven years earlier. Although he had not exhibited any symptoms of epileptic seizures, EEG showed independent sharp waves in the left and right temporal areas. The administration of ASM resulted in an improvement in the patient' s anterograde amnesia, which was confirmed by questioning him and his family about life events that occurred since the start of the ASM treatment. He was diagnosed with TEA, involving both ALF and AbA. In 200X+4, the ALF reappeared, and a pure amnesia attack was observed. One day in the morning, he and his wife went to a barbershop, where they met a close friend and enjoyed an interesting conversation. However, in the afternoon he did not remember going to the barbershop, or meeting and talking to their friend, while his behavior during these events had been quite normal.

Case C (cited from UKAI et al.[11], partially modified and simplified)
A male in his early 70s visited our memory clinic with his wife in 200X. His Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA) scores were 29 and 24, respectively. He was diagnosed with mild neurocognitive disorder due to Alzheimer's disease. In 200X+1, his MoCA score was 21. In 200X+4, his MMSE score deteriorated to 23. In December of the same year, his wife was woken at midnight by him screaming something. She talked to him while he stood with a vague expression on his face, but he did not answer and returned to bed. The next morning, he remembered nothing of the episode. EEG was performed, and continual spikes were detected. An FIAS was suspected, and ASM was administered. At the next examination, his MMSE score had improved to 30. He was finally diagnosed with ECI-A accompanied by FIAS.

DISCUSSION

1.From epileptic amnesic syndrome to the TEACS concept

The term TEACS was proposed in our previous paper,[9] prior to that we had called the condition 'broad TEA'.[7] We would like to discuss this concept by it comparing with Gallassi's concept of epileptic amnesic syndrome (EAS).[14,15]

Amnesic seizures associated with interictal memory impairment have been reported since the 1990s in some patients with epilepsy, particularly those with temporal lobe epilepsy. Gallassi et al. reported cases involving epileptic amnesic attacks and memory disturbances and named this condition EAS.[14,15] In the EAS concept, amnesic attacks are considered to correspond to TEA attacks, and interictal memory impairment is thought to correspond to ALF or AbA, although at this time ALF and AbA had not been clearly characterized and were not recognized as symptoms that are specific to TEA. Gallassi also mentioned cases that did not involve TEA attacks. These cases only involved a chronic memory complaint associated with clear-cut seizures, starting at the same time or shortly before seizures, and Gallassi used the term 'atypical or possible' EAS to describe them.[15] However, in the latter cases memory impairment was limited to relatively short periods of time around seizures, and observations of memory impairment over several years were lacking.

In contrast, TEACS is a group of pathological conditions, in which ALF/AbA does not necessarily occur at the same time or in close proximity to TEA attacks, but may precede TEA attacks or may persist in the absence of TEA attacks. We therefore understand these series of symptoms as a spectrum sharing a common underlying pathology. In other words, TEACS is a concept that further develops EAS into a persistent condition resulting from epileptic activity.

2.Does TEACS qualify as a form of epilepsy?

In 2005, the International League Against Epilepsy (ILAE) conceptually defined epilepsy as a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures. Furthermore, in 2014 the ILAE proposed the following criteria as a practical clinical definition of epilepsy: (1) At least two unprovoked seizures occurring at least 24 hours apart; (2) one seizure with a high risk of recurrence; or (3) the diagnosis of an epilepsy syndrome.[16] Based on this current definition of epilepsy, this means that at least one epileptic seizure is required for a diagnosis of epilepsy, unless the patient has a condition that is recognized as an established epilepsy syndrome.

We presume that the symptoms of TEACS (≒ALF/AbA) are caused by an epilepsy-related mechanism; i.e., continual excessive discharges by the neurons in the mesial temporal lobes that are not sufficient to give rise to clinical seizures, because ASM is effective in most cases of TEA/TEACS. Thus, the fact that no epileptic seizures, including TEA attacks, are observed in cases of TEACS (or ALF/AbA occurs long before the first epileptic seizure) is reasonable. Regarding the absence of seizures, the coexistence of unnoticed subtle seizures or seizures that only occur during sleep cannot be ruled out. Furthermore, if ALF persists for several years prior to TEA attacks it may be misdiagnosed as dementia, and newly occurring amnesic seizures may simply be considered to be dementia-related symptoms. In any case, it is necessary to suspect TEACS even if no obvious seizure symptoms are present.

Can TEACS be included in the same category of epilepsy syndrome as, for example, Landau-Kleffner syndrome? As the cause of TEACS has not yet been clearly determined (unlike for Landau-Kleffner syndrome), we consider that it is not reasonable to consider TEACS as an established epilepsy syndrome. If TEACS cannot be included in the category of epilepsy syndrome, it would not meet the criteria outlined in the practical definition of epilepsy, and hence, cannot be recognized as a form of epilepsy.[14]

3.Does ECI-A qualify as a form of epilepsy?

Subtle and sequential FIAS and non-convulsive status epilepticus (NCSE) are sometimes misdiagnosed as dementia. This is because impaired consciousness due to FIAS/NCSE and the associated postictal twilight state may persist for a few days or weeks. However, the cognitive impairment and behavioral and psychological symptoms caused by ECI-A may persist for several years or more without ASM treatment (Tables 2 and 4). Therefore, there is a high risk of ECI-A being misdiagnosed as dementia.

We presume that ECI-A is also caused by an epilepsy-related mechanism (continual excessive discharges by the neurons in the mesial temporal lobes), even though epileptic seizures do not occur in patients with the condition, as is the case in TEACS. Again, although unrecognized subtle seizures may be overlooked, and seizures may occur long after cognitive disturbances persist, seizures alone cannot explain persistent and deteriorating cognitive changes.

Can ECI-A be considered to be an established epilepsy syndrome? We consider that it is not possible to consider it as an established epilepsy syndrome for the same reason as for TEACS. Hence, we consider that ECI-A also does not qualify as a form of epilepsy.

4.How should epilepsy-related disorders that do not involve evidence of epileptic seizures be considered?

Here, conditions such as TEACS (ALF/AbA) and ECI-A, which are caused by continual excessive neuronal discharges that do not result in clinical epileptic seizures, shall be referred to as 'epilepsy-related disorders'.

As mentioned above, TEACS and ECI-A share the following commonalities: (1) Epileptic seizures are not always necessary for the development of symptoms; (2) ASM is almost always effective at ameliorating at least ALF and ECI-A; and (3) EEG often shows spikes and/or sharp waves in the temporal regions.

Despite the existence of TEACS and ECI-A, diseases that are attributed to epilepsy-related mechanisms, but do not involve epileptic seizures, have not been defined in epileptological terms. Is this appropriate? If not, how should these conditions be defined using epileptological terminology?

We consider that such conditions, which can occur clinically, even in the absence of epileptic seizures; produce clinical symptoms, such as persistent memory disorders and the decline of cognitive functions; and in which it is suggested that persistent abnormal discharges from the central neurons often induce paroxysmal EEG abnormalities (e.g., spikes and/or sharp waves), should be precisely defined using epileptological terminology, for example, using the term 'non-paroxysmal epilepsy-related disorders'.

5.Interference with the progression of epileptic pathology

There are various reasons why neurons in the brain may acquire epileptogenic properties. In late-onset epilepsy in older people without obvious structural abnormalities, several conditions, such as inflammation, auto-antibodies, sclerosis, microvascular disorders, and neurodegenerative diseases, have been postulated as etiologies.[17-20] We suspected that in these patients, the abnormal discharges were caused by the following process:

(1) A small number of neurons initiate abnormal discharges due to certain causes/mechanisms.
(2) The neurons producing abnormal discharges gradually become more numerous and synchronized.
(3) The abnormal discharges finally lead to epileptic seizures (subclinical seizures).
(4) The seizures become so apparent that the individual and people around them can recognize them (the condition clinically manifests as epilepsy).

In principle, epilepsy can be diagnosed logically at stage (3) or (4), but clinically at stage (4) only. On the other hand, epilepsy-related disorders, such as TEACS and ECI-A, can be diagnosed clinically at stage (2) or (3), since the clinical symptoms of TEACS/ECI-A can appear without epileptic seizures. In other words, TEACS or ECI-A may be a precursor to temporal lobe epilepsy. Thus, epileptological terminology should include two categories: 'epilepsy' and '(non-paroxysmal) epilepsy-related disorder'.

By establishing this new concept, continual excessive neuronal discharges could be recognized as a condition that may present with chronic symptoms, even if they never lead to a single seizure. Furthermore, recognition of this concept would open up therapeutic possibilities for epilepsy-related diseases with non-paroxysmal manifestations, such as TEACS and ECI-A. On the other hand, it should be noted that the spread of this new concept outside of doctors specializing in epileptology may lead to harmful effects, such as excessive use of ASM, which has side-effects, and excessive daily restrictions due to overdiagnosis.

CONCLUSIONS

1.There are at least two non-paroxysmal and chronic epilepsy-related disorders (TEACS and ECI-A); i.e., diseases that are probably caused

by continual excessive neuronal discharges that are not sufficient to give rise to clinical seizures.
2. TEACS and ECI-A share the following commonalities: (1) Epileptic seizures are not always necessary for the development of symptoms; (2) ASM is effective at ameliorating symptoms, such as ALF and ECI-A; and (3) EEG often shows spikes and/or sharp waves in the temporal regions.
3. The establishment of this new concept would open up therapeutic possibilities for non-paroxysmal and chronic epilepsy-related conditions.

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DISCLOSURES

The authors have no potential conflicts of interest to disclose.

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TABLES

Table 1. (cited from UKAI et al.[9]; partially modified)

Clinical diagnostic criteria for transient epileptic amnesia complex syndrome (TEACS)

1. The patient is middle-aged to elderly at onset and has no history of epilepsy.
2. ALF and/or AbA has been definitively diagnosed. ALF/AbA can be proven by questioning the patient and other people who know the patient' s behavior well.
3. The ALF and/or AbA precede any TEA attacks and/or other epileptic seizures.
4. Except for ALF/AbA, the patient' s cognitive functions are confirmed to be intact via clinical examinations.
5. There is evidence for an epilepsy-related mechanism. Such evidence can include (a) wake or sleep electroencephalography or (b) a clear response to antiseizure medication.

AbA, autobiographical amnesia; ALF, accelerated long-term forgetting; TEA, transient epileptic amnesia.
In general, ALF and AbA are defined as follows: ALF is the unexpected and rapid disappearance of memories of events that occurred in recent weeks or months; AbA is the discovery of large gaps in more remote autobiographical memories.[4,5]

Table 2.

Clinical diagnostic criteria for epileptic cognitive impairment resembling Alzheimer' s disease

1. The patient is middle-aged to elderly at onset.
2. The patient shows symptoms similar to Alzheimer' s disease (AD), for example, recent memory impairment; behavioral and psychological symptoms, such as apathy, euphoria, and aggression; and a reduced ability to perform activities of daily living.
3. The patient has no history of epilepsy or their AD-like symptoms appeared long before any epileptic seizures.
4. All AD-like symptoms resolved after the administration of antiseizure medication.
5. Electroencephalography often shows temporal spikes and/or sharp waves.

Table 3. (cited from UKAI et al.9, partially modified)

Clinical profiles and characteristics of patients reported to have TEACS in the literature

	Case A6	Case B7-9	the report by Hornberger et al.13
Age	Late 60s	Early 60s	44 years old
Sex	Female	Male	Female
Chief complaints	Amnesia, irritability	Amnesia, irritability	Amnesia
Medical history	Hypertension, hyperlipidemia	Hypertension, hyperlipidemia	Hypertension, thyroidectomy
MMSE score	29 (attention: 4/5) at first visit	29 (orientation: 9/10) at first visit	30 (4 years after first visit)
Cranial MRI findings	Normal	Normal	Normal
EEG findings	Sharp waves in the bilateral temporal regions	Sharp waves in the bilateral temporal regions	Sharp waves in the bilateral temporal regions
Onset of amnesia attacks	Never observed	About 8 years after ALF	About 4 years after ALF
ALF	Observed	Observed	Observed

AbA	Unknown (no data)	Observed	Observed
Effectiveness of ASM at preventing amnesia attacks	Not available	Clear response	Clear response
Effectiveness of ASM at preventing ALF	Clear response	Clear response	Found to be ineffective

AbA, autobiographical amnesia; ALF, accelerated long-term forgetting; ASM, antiseizure medication; EEG, electroencephalography; MMSE, Mini-Mental State Examination; MRI, magnetic resonance imaging; TEACS, transient epileptic amnesia complex syndrome.

Table 4.
Clinical profile and characteristics of a representative patient with ECI-A (Case C)

Age	Early 70s
Sex	Male (Japanese)
Chief complaints	Recent memory dysfunction, irritability
Medical history	None
MMSE score at the first visit (in 200X)	29
MoCA score at the first visit (in 200X)	24 (language: -1, delayed recall: -4, orientation: -1)
Cranial MRI findings	Normal
Initial EEG findings	Normal
MoCA score in 200X+1	21
MMSE score in 200X+4	23 (language: -1, delayed recall: -3, orientation: -1, attention: -2)
Findings of the second EEG	Spikes originated in the left temporal region
Onset of epileptic seizures	About 4 years after the first visit, about 8 years after the onset of memory dysfunction
Types of epileptic seizure	Focal impaired awareness seizure during sleep and postictal twilight state (suspected)
ALF	Suspected (the patient had forgotten the Great East Japan Earthquake and Tsunami, which had occurred several years earlier)
AbA	Suspected (the patient had forgotten the Great Hanshin-Awaji Earthquake, which had occurred over 20 years earlier)
Effectiveness of ASM at preventing epileptic seizures	Clear response
MMSE score after ASM (in 200X+4)	30
MoCA score after ASM (in 200X+5)	27

AbA, autobiographical amnesia; ALF, accelerated long-term forgetting; ASM, antiseizure medication; ECI-A, epileptic cognitive impairment resembling Alzheimer's disease, EEG, electroencephalography; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment, MRI, magnetic resonance imaging.

実践報告
当科もの忘れ外来における認知症看護認定看護師の役割と重要性

The role and importance of Certified Nurses in Dementia Nursing in our psychogeriatric memory clinic

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論文要旨：
当科もの忘れ外来における認知症看護認定看護師の役割と重要性

他の医療機関では類を見ないと思われる当科もの忘れ外来の診察の様子を症例呈示して，認知症看護認定看護師（DCNs）の役割と重要性について報告する．その要点は以下である．
1.当科外来におけるDCNsの役割は多種多様であり，医師の診療にも匹敵するほどの重要性を有している．
2.当科DCNsは，診察中に患者・家族へ質問や指導をすることが，許可・求められている．
3.当科DCNsは，認知症看護だけでなく，脳解剖学・脳放射線診断学・向精神薬を中心とした臨床薬理学などの医学的基礎知識や認知症診療の基礎をも習得する必要がある．
4.当科DCNsは，公認心理師の役割である神経心理検査や，医療ソーシャルワーカー・ケアマネージャーの役割である認知症関連の社会保険制度などの基礎的知識の習得も要求されている．
5.DCNsの上記のような多種多様な知識・技能の習得努力により，限られた診察時間内で，それなりの全人的な認知症診療の実施可能性が担保されている．

キーワード：
認知症看護，認知症看護認定看護師，もの忘れ外来，生活改善療法，全人的治療

英語抄録：
The role and importance of Certified Nurses in Dementia Nursing in our psychogeriatric memory clinic

The role and importance of Certified Nurses in Dementia Nursing (DCNs) in our memory outpatient clinic is reported, with a fictionalized case study of our unique healthcare system, which is thought to be rarely found in other clinics. The main points can be summarized as follows.
1.The role of DCNs in our outpatient department is diverse and as important as that of the doctor.
2.The DCNs are expected to ask questions and provide guidance to patients/families during consultations.
3.In order to fulfil the above roles, the DCNs have to acquire not only dementia nursing skills but also basic medical knowledges such as brain anatomy, brain radiology, and clinical psychopharmacology.
4.In addition, the DCNs are required to acquire basic knowledge of neuropsychological testing, which is the role of certified psychologists, and social insurance schemes related to dementia, which is the role of medical social workers or care managers.
5.The ability to provide a reasonable level of total dementia care within a limited time available for consultations is a result of the efforts made by DCNs to develop the skills and knowledge described above.

英語キーワード:
dementia nursing, certified nurse in dementia nursing, memory clinic, life-improving therapy, total care for dementia.

Effects of gait intervention using the draw-in maneuver on knee joint function and the thoracic kyphosis angle in knee osteoarthritis

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ABSTRACT
Background: To evaluate whether the knee adduction moment (KAM) could be reduced by a short instruction in the Draw-in (DI) maneuver in healthy adults, and whether knee joint function would improve with a longer DI gait intervention in patients with knee osteoarthritis (OA).
Method: In Study 1, healthy adults received 10 minutes supervised instruction in DI gait in and then practiced the gait independently for 10 minutes. Three-dimensional motion analysis measurement was performed in each phase. In Study 2, patients with OA performed a 20-minute DI gait intervention daily for 6 weeks. At baseline and after 6 weeks, knee pain, the Knee injury and Osteoarthritis Outcome Score, the MOS 8 item Short-Form Health Survey, thoracic kyphosis angle, knee joint range of motion, knee extension muscle strength, hip abduction muscle strength, and activity level were evaluated.
Results: In Study 1, the DI gait to decrease KAM could be learning following only 10 minutes of instruction and 10 minutes of self-practice in healthy adults. In Study 2, knee pain was reduced by 19% and the thoracic kyphosis angle was reduced by 2.6° after 6 weeks. No significant changes in other parameters were detected, and the implementation rate was 86±14%.
Significance: In healthy adults, DI gait instruction for 10 minutes of instruction and 10 minutes of self-practice reduced the KAM. In patients with knee OA, 20 minutes of DI gait per day for 6 weeks may reduce knee pain and thoracic kyphosis.

Keywords:
Knee osteoarthritis
Draw-in maneuver
Gait modification
Thoracic kyphosis
Knee adduction moment

1. Introduction

Continuous exercise is recommended as a treatment for knee osteoarthritis (knee OA), with emphasis on home-based exercise [1]. Higher rates of home exercise are reported to be more effective for reducing pain [2], but the completion rate of the intervention is only 75% ～ 90% and the implementation rate is only 60% ～ 95% [3-6]. In addition, the emergence of COVID-19 led to a general decrease in physical activity [7], and performing aerobic exercise at home, such as walking and stair climbing, is recommended to improve health [8, 9]. Home exercise implementation rates in general during the COVID-19 pandemic were low, however, ranging from 30% to 40% [10-13]. These findings emphasize the importance of providing home exercises that can easily be continued independently as prevention and treatment of knee OA.

The knee adduction moment (KAM) is an index of mechanical stress during walking that affects the onset and progression of knee OA [14]. A 1% increase in the KAM increases the risk of progression of knee OA by 6.46-fold [15]. Gait modification to decrease KAM has received attention as a treatment method, including the toe-out gait [16, 17] and lateral trunk lean gait [18]. Most of the methods, however, require forced modification of the lower limb position and trunk [19, 20], and it is particularly difficult for older patients with OA to change their gait pattern [21]. Therefore, gait modifications that do not involve forced postural changes are important for older individuals with knee OA.

The Draw-in maneuver (DI) gait was recently reported as a method to reduce the KAM without changing trunk or lower limb movements [22]. The DI maneuver is an intentional abdominal retraction that activates the transversus abdominis and internal oblique muscles [23]. The DI maneuver is performed as an exercise to stabilize the lumbar spine and relieve back pain by activating these muscles. [24, 25]. The amount of abdominal retraction (circumference) necessary for activating these muscles, however, has not been evaluated. The DI gait is an application of the DI maneuver during walking with an abdominal circumference reduction of approximately 2 cm to facilitate continuous DI [22]. The DI gait results in a 5% reduction in KAM compared with a normal gait [26]. The DI posture also decreases the thoracic kyphosis angle by an average of 4.2 ° [22]. Immediate effects of the DI gait are reported in healthy adults [26]. In patients with knee OA, the DI gait is expected to decrease the KAM and thus reduce knee pain, but neither the immediate nor long-term effects of the DI gait have been assessed in patients with knee OA. Older individuals have an increased thoracic kyphoscoliosis angle [27]. Kyphotic deformity of the spine negatively affects walking ability [28] and respiratory function [29]. The DI maneuver reportedly affects the thoracic kyphosis angle in healthy adults, but its effect in older individuals is unknown.

The present study examined the effect of a DI gait intervention on knee joint function and thoracic kyphosis. In Study 1, we first determined whether 10 minutes of DI gait instruction was adequate to reduce the KAM. Study 2 examined the effects of a 6-week DI gait intervention with use of a DI belt on knee pain as the primary outcome, and on knee joint function and thoracic kyphosis, quality of life, and activity level as secondary outcomes.

Previous studies reported increased muscle activity in the internal oblique abdominal muscles, external oblique abdominal muscles, and midsection muscles as well as decreased lever arm and KAM during the first half of the stance phase [30]. In the present study, we performed Study 1 to evaluate the hypothesis that the DI gait decreases KAM, as examined in the previous intervention study. Study 2 evaluated the hypothesis that a decreased KAM during walking reduces knee pain, thereby improving the number of steps taken and quality of life. Further, because previous studies suggested that performing the DI gait decreases the thoracic kyphosis angle by reducing the abdominal circumference, which increases the intra-abdominal pressure and thereby raises the thorax[22], we hypothesized that performing the DI gait would not only lead to immediate improvement in the thoracic kyphosis angle but also improve the normal posture after 6 weeks of intervention.

2. Methods

2.1. Study1

2.1.1. Participants

Study 1 participants were 5 male and 5 female students at Seijoh University (age: 20.6±0.9 years, hip-knee-ankle angle [HKA]: 177.7± 2.1°). Exclusion criteria were previous fracture of the femur or lower leg, lower limb disease such as meniscus or ligament injury at the knee joint, and lower limb surgery. In addition, because the average HKA alignment of healthy adults is 176°～178° , those with an HKA of less than 176° were excluded.

2.1.2. Study design

The instructional time and protocol for learning the DI gait were set based on previous studies evaluating the acquisition time of a gait modification to reduce KAM [21]. As baseline measurements, 3-dimensional (3D) motion analysis was performed while participants walked with a normal gait. Next, participants received a 10-minute instruction in performing the DI gait using a DI belt. 3D motion analysis measurements while they performed the DI gait. Finally, the subjects practiced DI gait alone for 10 minutes under unsupervised conditions, the 3D motion analysis measurement were performed again. In the baseline movement analysis, immediately after 10 minutes of instruction and again after 10 minutes of self-practice, 3 measurements were obtained and the average was used for the final analysis. Immediately after the 10 minutes of instruction, participants used a DI belt while the 3D motion analysis was performed, and in the analysis after the 10 minutes of self-practice, the measurements were performed without the DI belt. The DI belt is a custom-made tool worn at the level of the umbilicus that provides feedback on DI gait performance. When the abdominal circumference is increased or decreased by 2 cm, the change in the abdominal circumference causes the buckles to make a sound, thereby providing auditory feedback that the DI is being performed correctly (Fig. 1). The instruction method for the DI was modified from a previous study [26]. In addition, to facilitate understanding of the method, participants were instructed to place their backs against the wall, correct their posture as they would when measuring their height, and gently pull in

their stomachs.

2.1.3. 3D motion analysis

In the 3D motion analysis, the peak KAM was calculated. For the measurements, a 3D motion analysis system (Opti Track Motive body; Accuity Corp., Tokyo, Japan), a ground reaction force plate (FP-TF-4060; Tech Giken Corp, Kyoto, Japan), and 12 infrared cameras Flex3 (Accuity Corp, Tokyo, Japan) were used. The sampling rate of the ground reaction force meter was set to 1000 Hz and that of the infrared camera was set to 100 Hz. Infrared reflective markers were attached to 5 locations on the target limb: femoral greater trochanter, femoral medial epicondyle, femoral lateral epicondyle, tibia (midpoint between knee joint and ankle joint), and lateral malleolus. The center of the knee joint was set as the midpoint of the markers of the medial femoral epicondyle and lateral femoral epicondyle, and the knee joint angle and moment were calculated using the motion analysis software SKYCOM for Body (Acuity Corp). Before the gait measurement, the static standing posture was measured using a ground reaction force meter for 30 s with the feet shoulder-width apart, and the value at that time was used as the standard for each participant.

2.2. Study 2

2.2.1. Participants

The sample size was calculated using the statistical software G*Power with the mean (2.56, 2.14), standard deviation (0.61, 0.50), effect size (0.75), alpha error (0.05), and power (0.8) based on previous studies [21]. The sample size was 17, and the target population was set at 25 to account for a 30% dropout.

Participants were older individuals (age: 71.6±7.4 years) diagnosed with medial compartment OA of the knee joint (Kellgren-Lawrence grade II/III 9/13) at the Fukinodai Orthopedic Clinic. The inclusion criteria were diagnosis of medial compartment OA of the knee joint by X-ray examination and ability to walk without any assistance such as a cane. Exclusion criteria were lower extremity diseases other than knee OA, newly starting treatment within 3 months, and cognitive decline and/or inability to understand the instructions.

2.2.2. Intervention Protocol

The intervention period of the DI gait was 6 weeks, and the DI gait was performed for 20 minutes a day (or twice a day for 10 minutes) during daily activities. The DI gait was taught at baseline in the same way as in Study 1, and the DI gait was checked and re-taught 1 and 2 weeks after starting the intervention (Fig. 2). Participants were asked to keep a daily written record of how many minutes they performed the DI gait.

2.2.3. Outcome measures

At baseline and after 6 weeks, we evaluated the knee pain as the primary outcome, and as secondary outcomes, Knee injury and Osteoarthritis Outcome Score (KOOS), the MOS 8 item Short-Form Health Survey (SF-8), thoracic kyphosis angle, knee joint range of motion, knee extension muscle strength, hip abduction muscle strength, and activity level. The visual analogue scale (VAS) was used to assess knee pain, and subjects were asked to note their pain while walking during the previous week. The thoracic kyphosis angle was measured by moving the Spinal Mouse device along the spinous process from the 7th cervical vertebra to the 3rd sacral vertebra with subjects in an upright position, and the average value was calculated 3 times. The thoracic kyphosis angle obtained using this measurement method is the sum of the angles between the upper and lower vertebrae from the 1st to the 12th thoracic vertebra (°). The Spinal Mouse device is reported to have good reliability for measuring spinal alignment [31]. Passive range of motion of the knee joint was measured using a standard goniometer. Muscle strength was measured twice using a handheld dynamometer (MicroFET2 Muscle Tester; Hogan Health Industries, UT), and the maximum value was taken as the representative value. Knee extensor muscle strength was measured on the basis of isometric contraction in the sitting position with both the hip and knee flexed 90° [32, 33]. The chair leg and the ankle joint on the examination side were fixed with a non-stretchable strap, and isometric contraction was used to measure the knee-joint extensor muscle strength. Hip abductor strength was measured by isometric contraction with the patient in the supine position with the examination side up, hip joint abduction 20°, hip joint extension 5°, and knee flexed. The lower leg was placed in a knee-flexed position and isometric contraction was measured [34]. DI gait instruction was conducted for 10 minutes again at 1 and 2 weeks after the start of the DI gait intervention. In addition, the average number of steps taken for 2 weeks before and after the 6-week intervention was measured using an activity meter (Active style PRO, Omron Healthcare Corp., Kyoto, Japan). During the intervention period, the subjects recorded the time and status of the DI gait on a daily record sheet. An activity meter was instructed to be worn on the waist of the pants upon waking and removed at bedtime.

2.3. Data analysis

In Study 1, a one-way ANOVA and Bonferroni's post-hoc test were conducted to compare the KAM at 3 time points: baseline, immediately after 10 minutes of instruction, and after 10 minutes of self-practice.

In Study 2, to compare knee pain, KOOS, SF-8, knee joint range of motion, knee extension strength, hip abductor strength, and activity before and after the 6-week intervention, normality was confirmed by the Shapiro-Wilk test, followed by a corresponding t-test for normality and a Wilcoxon signed rank sum test for non-normality. To confirm that the DI gait was performed correctly, the same tests as in Study 1 were performed to compare the thoracic kyphosis angles at 4 time points: normal posture before the intervention, DI posture after DI practice, and normal posture and DI posture at 6 weeks after intervention.

The significance level for all analyses was set at >0.05. Statistical analysis was performed using SPSS25 (IBM Japan).

2.4. Ethical considerations

The Ethics Committee of Seijoh University approved the study (Approval number: 2020C0002), and all participants provided written informed consent to take part in the study.

3. Results

In Study 1, peak KAM after 10 minutes of DI gait instruction was not significantly decreased compared to that after a normal gait (p=0.11), but was significantly decreased after 10 minutes of self-practice (p=0.04) (Table Ⅰ).

For study 2, we had planned to include 25 patients with knee OA, but only 23 patients were enrolled in the study due to COVID-19; 1 patient dropped out (could not be contacted) and 22 patients were included in the analysis (age: 71.6±7.4 years, Kellgren-Lawrence grade Ⅱ/Ⅲ: 9/13). The effects of the DI gait intervention for 6 weeks are shown in Table Ⅱ. In a pre- and post-intervention comparison at 6 weeks, knee pain was significantly decreased (VAS; p=0.03). No significant difference was detected in the KOOS (p=0.07), SF-8 Physical Component Summary (p=0.47), or SF-8 Mental Component Summary (p=0.43) scores. The number of steps did not differ significantly before and after the 6-week intervention (p=0.15). No significant differences were detected in any of the other parameters. The thoracic kyphosis angle did not differ significantly between the normal and DI postures at baseline (p=0.08). After 6 weeks of intervention, the thoracic kyphosis angle in the DI posture was significantly decreased compared with that in the normal posture (p=0.01). Comparison of the normal posture before and after the 6-week intervention showed a significant improvement in the posture, with a significant decrease in the thoracic kyphosis angle (p=0.03) (Fig. 3). Upon re-instruction of the DI gait, the thoracic kyphosis angle improved from 31.6° in the normal posture to 29.4° in the DI posture in the first week and from 30.8° in the normal posture to 28.2° in the DI posture in the second week. The mean daily DI gait time was 25.4 ±8.2 minutes. During the period of this study, COVID-19 emergency declaration and priority measures to prevent the spread of the disease were in effect.

4. Discussion

The results of Study 1 confirmed that 10 minutes of DI gait instruction and self-practice is sufficient for healthy adults to master the DI gait and reduce KAM. When DI is properly performed, muscle activity of the internal oblique abdominal muscles, external oblique abdominal muscles, and midsection muscles is increased, and the lever arm and KAM is decreased in the first half of the stance phase [26]. Although no muscle activity measurements were obtained in this study, it is assumed that DI increased the muscle activity of the gluteus medias and moved the trunk smoothly to the stance side, resulting in a shorter lever arm during walking, and consequently a decrease in the KAM1 and peak KAM.

The results of Study 2 demonstrated that the 6-week DI gait intervention significantly decreased the knee pain VAS score by an average of 8.3 mm (19%). Although KAM was not measured in this study, the decrease in the knee pain VAS score was thought to be due to a decrease in the KAM during the DI gait, as indicated by the results of Study 1. The mean improvement in KOOS was 5%, but this difference was not significant (P=0.07). Several studies have reported a reduction in the KAM by the DI gait over the same 6-week period as the present study. Richards et al. found that weekly toe-in gait training resulted in a 6.9% decrease in KAM1 and a significant reduction in WOMAC functional scores after the intervention. Although knee pain was decreased at rest and while walking, the difference was

not significant [35]. Shull et al. reported that weekly toe-in gait training improved KAM1 by 20%, WOMAC pain score by 29%, WOMAC function score by 32%, and VAS by 20 mm after a 6-week intervention[36]. As described above, a 6-week gait intervention is reported to have an improving effect. Minimum detectable differences in the knee OA VAS score reportedly range from 9.7 mm [37] to 19.9 mm[38]. Therefore, the significant VAS reduction of 8.3 mm (19%) following the DI intervention in this study did not exceed the minimum detectable difference, suggesting that the effect of DI gait on knee pain may be insufficient for our intervention methods, including walking method, daily intervention time, and intervention duration. Nevertheless, our implemented DI gait modification does not force a change in the alignment of the lower limb while walking and the feedback tool for gait modification can be used routinely. The change in the KOOS following implementation of the DI gait intervention did not reach statistical significance (P=0.07). Further research with a longer follow-up time is needed as long-term intervention with the DI gait is likely sustainable, and improvements over time may be expected.

There was no significant change in the SF-8 or activity (number of steps). The baseline number of steps was 3927±1639, and after the 6-week intervention it was 3587±1560, which tended toward a decrease. In the present study, the number of steps was reduced during limited mobility during COVID-19, which may be why SF-8 did not improve. The mean number of steps per day in patients with knee OA was reported to be 7753 steps [39], and the number of steps taken by the subjects in this study was lower. Physical activity correlates with the quality of life [40], and the higher the physical activity, the higher the quality of life [41]. During the intervention period of this study, a state of emergency was declared due to COVID-19, and the number of steps decreased by 38.9% under the state of emergency [42].

The thoracic kyphosis angle decreased by an average of 2.60° in a comparison with normal posture before and after the 6-week intervention. A previous study of 2 cm abdominal circumference reduction in healthy adults reported an immediate improvement of 4.2 thoracic kyphosis angle [22], and the results of the present study were found to improve the thoracic kyphosis angle in patients with knee OA. In a previous study, the decrease in the thoracic kyphosis angle during the DI gait was considered to be due to the decrease in the abdominal circumference, which increases the intra-abdominal pressure, thereby raising the thorax [22]. In the present study, we hypothesized that the thoracic kyphosis angle was reduced by DI by the same mechanism. Other previous studies investigating thoracic kyphosis angle reduction with exercise therapy focused on supervised exercise therapy. Katzman et al. reported an improvement in the thoracic kyphosis angle of 3.3° with 1 h of spinal extension and postural training 3 times a week for 6 months [43], and Kuo et al. reported an improvement of 2.3° with 75 minutes of Pilates twice a week for 10 weeks [44]. The results of the present study showed similar improvement to that reported in the previous studies. Because the DI gait can be performed without supervision, the intervention may be used more widely in the future.

At baseline, there was no difference between the normal posture and the DI posture, but after 6 weeks of the DI gait intervention, the thoracic kyphosis angle decreased significantly compared with that in the normal posture. In previous studies, when the thoracic kyphosis angle was reduced by DI, it was considered that DI was appropriately performed [22]. Lee et al. [45] reported that the percentage of contraction of the transversus abdominis muscle was low during the first day of DI training, but improved after 2 weeks of DI training (20 minutes daily). The DI gait performed in this study can be learned by healthy subjects after 10 minutes of instruction and 10 minutes of self-practice, but because patients with knee OA may have difficulty mastering the DI gait after such a short period, they should first practice the intervention for approximately 2 weeks or receive more instruction.

During the COVID-19 epidemic, the rate of home exercise was reported to be 30% ～ 40% [10-13]. In the present study, the implementation rate of the intervention was high (86±14%) and sustainable despite the ongoing COVID-19 pandemic. The completion rate of home exercise intervention for knee OA is 75% ～ 90%, and the implementation rate is 60% ～ 95% [3-6]. Normally, home exercise for knee OA requires additional exercise time, usually 3 ～ 5 times a week with multiple exercises such as muscle strengthening and stretching [5, 6]. The DI gait intervention used in this study could be performed during daily activities by wearing a DI belt, which is thought to have resulted in a high rate of implementation.

In this study, it is unclear whether the KAM actually decreased because KAM measurements could not be performed before and after the 6-week intervention in patients with knee OA. In addition, because it was not possible to ascertain how many times participants heard auditory feedback while wearing the DI belt, the actual amount of time during which the correct DI gait was performed is unclear. Another limitation of this study is that we could not establish a control group because of difficulties recruiting subjects during the pandemic, and therefore, we could not make comparisons.

This intervention method requires approximately 2 weeks for older persons to master, but it can be performed as part of the daily life activities and does not require participants to travel to a new location or set aside a separate time for focused exercise. In addition, because self-feedback of local muscle contraction of the trunk is possible using a belt, once the patient learns the method, older persons can continue to perform this intervention (DI gait) on their own. Therefore, long-term intervention is easy to perform, and the DI gait is considered appropriate as a long-term intervention for patients with knee OA and older persons.

5. Conclusion

The DI gait to decrease KAM could be learning following only 10 minutes of instruction and 10 minutes of self-practice in healthy adults. In patients with knee OA, performing the DI gait intervention (20 minutes daily for 6 weeks) improved knee pain and the thoracic kyphosis angle. No significant changes were observed in KOOS and SF-8, but a marked advantage of the DI gait is that it can be implemented in daily life. Some practice, however, is required for older persons.

Author contributions

Study concept and design: Murakami, Ota, Fujita
Acquisition of material and data: Murakami, Fujita, Ohko, Kawasaki
Data analysis: Murakami
Preparation of the manuscript: Murakami, Ota
Critical reviewing and approval of the manuscript: All authors.

Conflict of interests

Ota S is co-CEO of M-Support, LLC, and he has a royalty contract with Matsumoto Prosthetic & Orthotics Manufacturing CO. LTD.. However, the company had no control over the design, analysis, interpretation, writing, or publication of this study.

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Fig. 1
Custom-made draw-in maneuver feedback belt
When the wearer has contracted the abdominal muscles sufficiently to decrease the abdominal circumference by 2 cm, the magnets collide (left panel) and when the abdominal contraction relaxes, the magnets separate quickly, snapping against the outside of the buckle (right panel). In both cases, a sound is emitted, which provides auditory feedback to the wearer indicating whether nor not the DI method is being performed correctly.

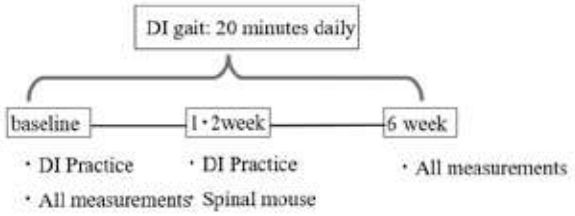

Fig. 2
DI gait intervention protocol
The DI gait intervention period was 6 weeks, with 20 minutes (or two 10-minute sessions) of DI walking per day, which was performed when walking during daily activity. All measurements were obtained at baseline and after 6 weeks.

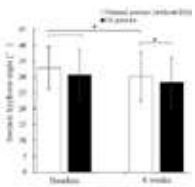

Fig. 3
Effect of DI gait intervention on the thoracic kyphosis angle
The thoracic kyphosis angle was significantly reduced in the DI posture after 6 weeks of intervention compared with the normal posture. * indicates a significant difference.

Table I
Immediate effects of DI gait

	Baseline (Normal gait)	After instruction (DI gait with DI belt)	After self-practice (DI gait without DI Belt)	P-value Baseline -After instruction	Baseline - After self-practice	After instruction-After self-practice
PKAM (Nm/kg)	0.54±0.11	0.51±0.13	0.50±0.13	0.11	0.04	0.68

DI: Draw-in maneuver
PKAM: maximum knee adduction moment

Table II
Effects of a 6-week DI gait intervention

	Baseline	6 weeks	P-value	ES
VAS (mm)	41.5±2.14	33.1±24.6	0.03	0.47
KOOS (%)	59±16	63±13	0.07	0.95
SF-8 PCS	43.3±4.3	41.8±4.6	0.47	0.16
SF-8 MCS	49.2±7.5	51.2±7.1	0.43	0.17
Knee flexion range of motion (°)	132.0±16.2	132.3±16.7	0.91	0.02
Knee extension range of motion (°)	-3.4±4.9	-2.7±4.2	0.08	0.37
Knee extension strength (N/kg)	3.2±1.1	3.3±1.1	0.35	0.09
Hip abduction strength (N/kg)	1.9±0.7	2.0±0.7	0.27	0.14
Step (step/day)	3927.7±1639.8	3587.7±1560.6	0.15	0.21

VAS: Visual analogue scale; KOOS: Knee injury and Osteoarthritis Outcome Score
SF-8: The MOS 8 item Short-Form Health Survey; PCS: Physical Component Summary
MCS: Mental Component Summary; ES: effect size

Title page
Association between the Presence of the Parasagittal Cyst-like Structures and Cognitive Function

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Running head: Cognitive function and Parasagittal Cysts
Key words: magnetic resonance imaging, glymphatic system, meningeal lymphatic vessel, cerebrospinal fluid, cognitive function

Abstract
Purpose: A cyst-like structure near superior sagittal sinus (Arachnoid Cuff Exit Site cysts: ACES cysts) has been reported in magnetic resonance (MR) imaging. The purpose of this study was to investigate association between presence of ACES cysts and cognitive function, as assessed using mini-mental state examination (MMSE) scores.
Methods: We retrospectively analyzed patients who underwent head MR imaging for dementia screening. Differences in patient ages and MMSE scores between patients with and without ACES cysts were examined using the Mann-Whitney U test. Correlations between patient ages and MMSE scores were examined for patients with and without ACES cysts using Spearman's rank correlation coefficient. Multivariate logistic regression analysis was performed to examine the influence of presence or absence of ACES cysts on MMSE score.
Results: 112 patients (male: 28, female: 84) were included for the analysis. The patient ages ranged from 66 to 94 years (median: 83

years). MMSE scores ranged from 6 to 30 (median: 24). ACES cysts were detected in 57 patients (50.9%). There was no significant difference in patient ages between the patients with and without ACES cysts (P = 0.058). The patients with ACES cysts showed significantly lower MMSE scores compared to the patients without ACES cysts (P < 0.001). In the patients with ACES cysts, there was no significant correlation between patient ages and MMSE scores (ρ = -0.178, P = 0.185), whereas a significant negative correlation was observed in the patients without ACES cysts (ρ = -0.347, P = 0.001). The presence of ACES cysts was determined as an independent predictor for the lower MMSE score (odds ratio = 15.2, 95% confidence interval = 5.59–41.4, P < 0.001).
Conclusion: The presence of the ACES cysts showed significant association with lower MMSE score. ACES cysts might be involved in the pathological processes affecting cognitive function.

Introduction

The clearance pathway of the waste in the brain including amyloid β through exchange of cerebrospinal fluid (CSF) and interstitial fluid has been proposed.[1-3] In animals, meningeal lymphatic vessels have been reported to exist along the superior sagittal sinus (SSS).[4] In a human study using magnetic resonance (MR) imaging, two-dimensional fluid attenuated inversion recovery (2D-FLAIR) images after intravenous administration of gadolinium-based contrast agent (GBCA) showed the tubular structures along the SSS, which are suggested to be the meningeal lymphatics.[5] Intracranial T2 component analysis has reported that water component with relatively short T2 compared to the CSF in the subarachnoid space was distributed around the brain surface and in the dura matter along the SSS.[6] It has been reported that intrathecally administered GBCA time-dependently migrates to the high convexity region through the foramen magnum, and distributes in the dura matter along the SSS.[7] Based on these studies, the meningeal lymphatics are considered one of the candidates for the downstream portion of the waste clearance pathway in the brain.[4-9]

Recently, the presence of cyst-like structure in the subarachnoid space near the SSS was reported using MR imaging.[10-12] In the previously reported study using MR cisternography (MRC), the imaging finding that beak-like or tube-like structures extending from the cyst-like structures connect to the pericortical venous space was shown.[13] It has been suggested that the cyst-like structures identified in the high convexity region may reflect obstruction or stasis of the downstream of brain waste clearance pathway.[8, 13, 14] Impaired excretion of brain waste is thought to cause accumulation of abnormal proteins such as amyloid β.[2, 3]

Neurodegenerative diseases, such as Alzheimer's disease, are often associated with cognitive impairment. However, there are currently no reports that have investigated the association between the presence of cyst-like structures and cognitive function. The cyst-like structures are located near arachnoid cuff exit (ACE).[15] To address this knowledge gap, we have termed these structures "ACES cysts (Arachnoid Cuff Exit Site cysts)." Our hypothesis is that the presence of ACES cysts may be linked to cognitive function. Therefore, the purpose of the current retrospective study was to investigate the association between the presence of ACES cysts and cognitive function, as assessed using mini-mental state examination (MMSE) scores in patients with suspected dementia.

Materials and Methods

Patients and MR imaging

The ethics committee of our hospital approved the current retrospective study with a waiver of consent from the patients (approval number: 202307). The inclusion criteria of the current study were as follows: patients who underwent non-contrast-enhanced head MRI, including whole-brain MRC, for dementia screening between February 1, 2021, and March 1, 2023. Additionally, these patients had undergone MMSE evaluation through one-on-one interviews conducted by clinical psychologists.

The exclusion criteria of the current study were as follows: patients with significant body motion during MR scanning were excluded because the presence of ACES cysts could not be accurately determined. Patients with hemorrhagic lesions, including scars from microbleeds, were excluded to avoid confounding due to vascular dementia and ensure a homogeneous patient background. Patients with infarction involving the cerebral cortex were also excluded to prevent the risk of including vascular dementia. Patients with a narrow subarachnoid space in the high convexity, where the brain parenchyma was in contact with the SSS, were excluded due to the limited subarachnoid space for ACES cysts. This criterion was also intended to rule out normal pressure hydrocephalus. A flowchart for the patient selection process was shown in Fig. 1.

All MR imaging was performed using a 3-tesla MR scanner (MAGNETOM Skyra; Siemens Healthcare, Erlangen, Germany) with a 32-channel phased-array head coil. Non-contrast-enhanced MRC including the whole brain were obtained. The MRC was based on a heavily T2-weighted 3D-fast spin echo sequence with repetition time of 4400 ms, echo time of 547 ms, and voxel size of 0.51 × 0.51 × 1.0 mm. The thickness of imaging slab was 256 mm. The center of the imaging slab was set at the level of the mamillary body. The imaging slab oblique was set to axial plane parallel to the anterior commissure-posterior commissure line. The detailed parameters of MRC are summarized in Table 1.

Image analyses

Two radiological technologists with 20 years (TO) and 8 years (RY) of experience in MR imaging performed all image analyses. The MRC were displayed on a DICOM viewer (RapideyeCore version V1.4; Cannon Medical Systems, Tochigi, Japan). The display conditions for MRC were set to a window width of 1000 and a window level of 400. The presence of ACES cysts was determined within 10 mm of the superior part of the subarachnoid space and within 10 mm from the midline of the brain on MRC. The criteria for determining the presence of ACES cysts were defined as follows.

1. A structure with a water signal, completely surrounded by a capsule.
2. Adjacent to the SSS.
3. Having a long diameter greater than 3 mm.
4. Having a smooth round or oval shape.
5. Not protruding into the skull bone.

In case of any disagreement between the two observers, consensus was obtained after their discussion. An example of determining the presence of ACES cysts is shown in Fig. 2.

Statistical analyses

The interobserver agreement between two observers in determining the presence or absence of ACES cysts was evaluated using the kappa coefficient. The differences in patient ages and MMSE scores between the patients with and without ACES cysts were evaluated with the Mann-Whitney *U* test. The correlation between patient ages and MMSE scores was evaluated by Spearman's rank correlation coefficient (ρ) in patients with and without ACES cysts. Multivariate logistic regression analysis was performed to investigate factors affecting MMSE score. In this multivariate analysis, the outcome was defined based on whether the MMSE score was higher than its median or lower than or equal to its median. The explanatory variables were the presence or absence of ACES cysts, patient age, patient sex, hypertension, and white matter hyperintensity (WMH). The number of explanatory variables was determined based on previous report.[16] The MMSE scores used in these statistical analyses were the median of the last three MMSE scores obtained clinically. Hypertension was defined as systolic blood pressure measured before the MR imaging being 140 mmHg or higher, or diastolic blood pressure being 90 mmHg or higher, according to the guidelines of the Japanese Society of Hypertension (JSH 2019).[17] WMH was defined as grade 2 and 3 of periventricular hyperintensity, or grade 2 and 3 of deep white matter hyperintensity, according to the Fazekas scale.[18] All statistical analyses were performed with free statistical software (R software version 3.6.1; The R Foundation, https://www.r-project.org/). We defined 5% as a threshold for statistical significance.

Results

Out of the 207 patients included in the current study, 95 patients were excluded, leaving 112 patients for the analyses. Out of the included 112 patients, 60 patients were clinically diagnosed with dementia, and 52 patients were diagnosed with mild cognitive impairment. The detailed patient population are shown in Table 2.

The interobserver Kappa coefficient for determining the presence or absence of ACES cysts between two observers was 0.780 (95% confidence interval: 0.657–0.904), indicating substantial agreement. There was no significant difference in patient's age between the patients with and without ACES cysts. The MMSE scores were significantly lower in the patients with ACES cysts than in those without ACES cysts (Fig. 3).

In the patients without ACES cysts, there was a significant negative correlation between patient's age and MMSE score. In the patients with ACES cysts, there was no significant correlation between patient's age and MMSE score (Fig. 4).

The number of patients with higher MMSE score than its median was 51 (median MMSE score: 28). The number of patients with lower MMSE scores than its median or equal to its median was 61 (median MMSE score: 20). Multivariate logistic regression analysis showed that the presence of ACES cysts was an independent factor associated with MMSE score. Age, sex, hypertension, and WMH did not significantly affect MMSE score. The summary of the multivariate logistic regression analysis is shown in Table 3.

Discussion

In the current study, we examined the association between the presence of ACES cysts and cognitive function. Our findings revealed that MMSE scores were significantly lower in patients with ACES cysts compared to those without ACES cysts. Additionally, MMSE scores showed a negative correlation with age in patients without ACES cysts, whereas, no significant correlation was found in patients with ACES cysts. To our knowledge, this is the first study demonstrating an association between ACES cysts, which are cyst-like structures adjacent to the SSS, and MMSE scores. While it is generally considered that MMSE score declines with aging, the lower MMSE scores in the patients with ACES cysts might be affected by not only typical aging processes but also the presence of ACES cysts. However, it is premature to conclude that the presence of ACES cysts is a risk factor for cognitive impairment based on the results of the current study. Previous study has reported the presence of ACES cysts in relatively young patients, such as a 32-year-old, and has found no correlation between the number of ACES cysts and patients' age.[10] Similarly, in our current study, there was no significant difference in patients' age between patients with and without ACES cysts. ACES cysts may be an anatomical structure that exists from an early age.

On the other hand, although the P-value was not statistically significant, there may be a trend toward a difference in patient ages between those with and without ACES cysts. The previously reported study found a non-significant but slight correlation between the of diameter of ACES cysts and patient' s age, suggesting that ACES cysts may increase in size with aging.[10] In addition, washout of intravenously administered GBCA (IV-GBCA) from ACES cysts at 24 hours after intravenous administration of GBCA was delayed in patients with leakage of IV-GBCA around the cortical veins compared to in those without the leakage.[11] As the leakage of IV-GBCA, age-dependency has been confirmed.[19-21] Based on these findings, the growth of the ACES cysts may be age-related changes, because the cysts with delayed washout of GBCA might have higher osmolarity than those with good washout.

The identification of structure involved in the maintenance of fluid homeostasis in the brain has been reported. Recently, subarachnoid lymphatic-like membrane (SLYM) was proposed as a potential fourth meningeal layer, which divides the subarachnoid space into two compartments: the outer subarachnoid space and the inner subarachnoid space.[22] SLYM is reported to be impervious to solutes with a greater molecular weight than 3000 daltons, such as waste proteins.[22] Assuming that ACES cysts retain interstitial fluid, it would be interesting to investigate the structural similarities between the walls of ACES cysts and SLYM for further research of the downstream portion of the clearance pathway of the waste in the brain. The ACE serves as a traffic channel for molecular and immunity through the arachnoid barrier at the site where bridging veins pass through.[15] It is important to investigate the detailed anatomical relationship between ACES cysts and ACE in future research.

The current study has several limitations. First, it is a retrospective study conducted at a single institution. Furthermore, the patient sex in the current study was biased toward females. This sex imbalance may be due to the background of the large number of female patients attending our geriatric psychiatry department. To reduce this bias, it would be effective to conduct the research across multiple institutions. Second, the patient cohort was biased towards patients with suspected dementia, resulting in lack of control subjects. This deviation of patients may potentially limit the generalizability of the presence of ACES cysts. Age-matched control cohort should be investigated. Third, the MMSE serves as an indicator of general cognitive function but does not provide detailed insights into specific cognitive domains. Further studies incorporating detailed cognitive assessments, such as Alzheimer's disease assessment scale, frontal assessment battery, and repeatable battery for the assessment of neuropsychological status, are warranted to address the limitations of MMSE. Additionally, there is a lack of information of biomarkers, such as amyloid positron emission tomography, amyloid β in CSF, and Apolipoprotein E genotype. Potential confounders, such as diabetes, chronic kidney disease, and years of education, were not included in the analysis. Due to the small number of patients, the factors included in the analysis were limited.[16] Further studies with larger cohorts should incorporate these factors to improve the robustness of the findings and control for confounding effects. Fourth, the volumetric analysis was not performed. The determination of ACES cysts was based on subjective methods. The application of automated techniques such as the 3D region growing method is warranted to facilitate quantitative evaluation including volumetric analysis. Finally, it might be interesting to investigate changes in ACES cysts before and after the treatment of sleep disorders, during the follow-up after mild head injury or concussion, and before and after Lecanemab treatment in patients with Alzheimer's disease.

Conclusion

There was a significant association between the presence of ACES cysts and lower MMSE score. ACES cysts might be involved in the pathological processes affecting cognitive function. Further studies are warranted to reveal the underlying mechanisms linking ACES cysts with cognitive function.

Conflicts of Interest

Rintaro Ito is a professor in the Department of Innovative Biomedical Visualization (iBMV), which is financially supported by Canon Medical Systems Corporation. All the other authors declare that they have no conflicts of interest.

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Legend

Fig. 1 A flowchart for the patient selection process.

Fig. 2 Representative images of determination of presence of ACES cysts. Within 10 mm of the superior part of the subarachnoid space and within 10 mm from the midline of the brain on MRC (a), a structure with a water signal, completely surrounded by a capsule adjacent to the SSS was defined as the ACES cysts (b) (arows). ACES cysts, arachnoid cuff exit site cysts; MRC, magnetic resonance cisternography.

Fig. 3 Difference in patients' age and MMSE score between the patients with and without ACES cysts. There was no significant difference in patient' s age between the patients with and without ACES cysts (a). The MMSE scores were significantly lower in the patients with ACES cysts than in those without ACES cysts (b). MMSE, mini-mental state examination; ACES cysts, arachnoid cuff exit site cysts.

Fig. 4 Correlations between age and MMSE score. In the patients without ACES cysts, there was a significant negative correlation between patient' s age and MMSE score. In the patients with ACES cysts, there was no significant correlation between patient' s age and MMSE score. MMSE, mini-mental state examination; ACES cysts, arachnoid cuff exit site cysts.

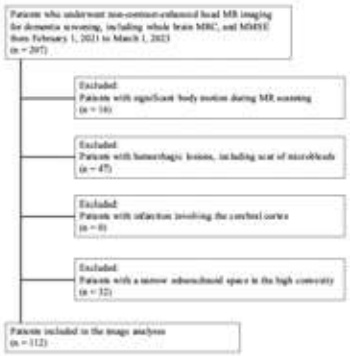


Fig. 1

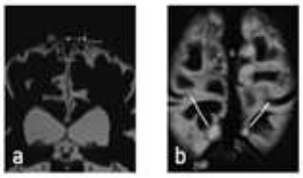
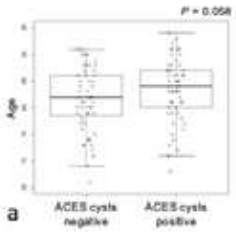


Fig. 2



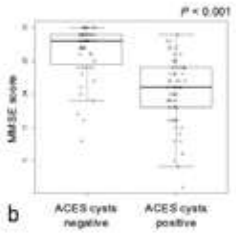


Fig. 3

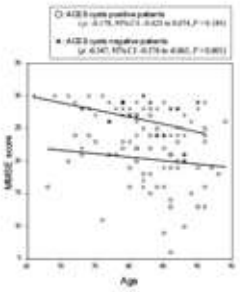


Fig. 4

Table 1. Detailed scan parameter

Parameter	Value
TR/TE (ms)	4400/547
Slice thickness (mm) /Slices	1.0/256
Refocus flip angle (degree)	120
Band width (Hz/Px)	434
Echo train length	360
Field of view (mm)	165×196
Matrix	324×384
Pixel size (mm)	0.51×0.51
Parallel imaging/Accel. factor	GRAPPA/2
Fat supression	Frequency-selective preparation pulse
Number of excitation	1
Acquisition time (min)	3.1

TR, repetition time; TE, echo time

Table 2. Patient characteristics

(n = 112)	
Age (year-old) [i]	82.4 (83) (66-94)
Female [ii]	84 (75%)
MMSE score [i]	23.3 (24) (6-30)
Hypertension [ii]	55 (49.1%)
WMH [ii]	58 (51.8%)
ACES cysts [ii]	57 (50.9%)

[i] mean (median) (range), [ii] number (%)
MMSE, mini-mental state examination; WMH, white matter hyperintensity; ACES cysts, Arachnoid Cuff Exit Site cysts

Table 3. Odds ratios and 95% confidence intervals of lower MMSE score from multivariate logistic regression analysys

Variable	Odds ratio	95% confidence interval	P value
Age	1.07	0.983–1.16	0.117
Female	1.80	0.559–5.79	0.324
Hypertension	0.540	0.208–1.40	0.206
WMH	0.517	0.190–1.40	0.195
Presence of ACES cysts	15.2	5.59–41.4	< 0.001

MMSE, mini-mental state examination; WMH, white matter hyperintensity; ACES cysts, arachnoid cuff exit site cysts

経験（臨床実践報告）
認知症看護認定看護師が当科もの忘れ外来で求められる役割とその実践

The role and practice of Certified Nurses in Dementia Nursing in our memory outpatient clinic

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論文要旨：
認知症看護認定看護師が当科もの忘れ外来で求められる役割とその実践

もの忘れ外来における認知症看護認定看護師の役割として，認知症看護の知識や技能だけではなく，多種多様な知識・技能が要求される。認知症診療においては，患者・家族のニーズは個々によって異なるため，患者が療養生活で抱える問題は複雑である。もの忘れ外来には多くの患者が来院するため，限られた時間で，診療上や療養上のいろいろな問題に対して，速やかに対応を決定する必要がある。そのためには，認知症看護認定看護師は，院内だけでなく地域とも連携しながら患者・家族と関わり，状況を常に把握しておくべきである。また，診察時間外であっても，必要な対応をとれるように，病院の体制も含めて，準備しておくことが望まれる。

キーワード：
認知症看護，認知症看護認定看護師，もの忘れ外来，地域連携，多職種連携

英語抄録：
The role and practice of Certified Nurses in Dementia Nursing in our memory outpatient clinic

The role of Certified Nurses in Dementia Nursing within memory outpatient clinics requires expertise in dementia care and a diverse skill set. The needs of patients and their families vary, with complex issues arising in their care and daily life. As many patients visit memory clinics, prompt decision-making regarding medical and therapeutic matters within limited timeframes is essential. Certified Nurses in Dementia Nursing are important for collaborating with patients and their families, including support beyond hospital settings in the community and ensuring patients stay informed about their situation. Moreover, these certified nurses should be prepared to take necessary actions, even outside regular consultation hours, including establishing an in-hospital support system.

英語キーワード:
dementia nursing, certified nurse in dementia nursing, memory clinic, community cooperation, multidisciplinary cooperation.

Macular hole surgery as a historical perspective

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Abstract
Purpose : To evaluate the outcomes of macular hole (MH) surgery as a historical perspective after its inception in 1991.
Patients and methods : Retrospective review of 1032 eyes of 949 patients with an idiopathic MH who were followed for at least one year after the initial surgery. All surgeries were performed from 1990 to 2016 by one surgeon (NO) and included phacovitrectomy for patients of ≥40-years-of-age, a removal of the posterior hyaloid and epiretinal membrane, and SF6 gas tamponade with a 1-week face-down. After 1998, internal limiting membrane (ILM) peeling became the conventional procedure. All surgeries were classified into four periods based on the year of the initial surgery. The first period was 1990 ～ 1995 (n = 222), the second period was 1996 ～ 1999 (n=327), the third period was 2000 ～ 2004 (n = 234), and the last period was 2005 ～ 2016 (n=249).
Results : The mean follow-up period was 81.3, 79.8, 88.4, and 77.3 months; hole size was 0.33, 0.28, 0.25, and 0.24 disk diameter; hole duration was 15.1, 10.6, 8.2, and 6.1 months; the decimal visual acuity (VA) was 0.13, 0.15, 0.17, and 0.19. The initial closure rate was 61.3, 78.0, 96.6, and 96.4%. The final decimal visual acuity was 0.33, 0.50, 0.66, and 0.79. The rate of a final decimal VA of 0.5 or better was 48.2, 66.4, 82.1, and 88.8%. The rate of a final decimal visual acuity of 1.0 or more was 17.6, 29.3, 43.6, and 58.2%. Multiple regression analyses showed that hole duration and ILM peeling were significantly associated with both the anatomic and functional outcomes.
Conclusion : The favorable outcome of MH surgery was primarily achieved by earlier surgery and conventional ILM peeling. Favorable results might be obtained using only conventional ILM peeling.
Keywords: macular hole, evolution, internal limiting membrane, early surgery, vitrectomy

Introduction
Macular holes (MH) surgery has evolved[1] after Kelly and Wendel' s preliminary report in 1991[2] and 1993.[3] Currently, MH surgery is one of the most successful operations performed on the retina

with most studies reporting a single-operation success rate exceeding 90%.[4] Initially, MH surgery was advised for patients whose vision was ≦20/50, and the surgery was a 5-step operation: pars plana vitrectomy, removal of adherent cortical vitreous, stripping of epiretinal membranes (when present), a total gas-fluid exchange (typically with SF6 gas), and 1 week of strict face-down positioning.[2,3]

Peeling the internal limiting membrane (ILM) around the MH, i.e., a conventional ILM peeling, was instituted in 1997[5] and is now widely performed as a routine surgical procedure. Its use has led to favorable functional and anatomical results.

Recently, several new adjuvant manipulation techniques have been reported, including inverted ILM flap[6], macular detachment[7], radial retinal incision[8], autologous ILM transplantation[9], lens capsule flap[10], autologous retinal transplantation[11], human amniotic membrane transplantation[12], and retinal massage[13]. However, long-term effects of these techniques remain to be undetermined.

The purpose of this study was to evaluated the outcomes of MH surgery with and without conventional ILM peeling from our consecutive case series[14-20] performed by the same surgeon (NO) over a 20-year period after its inception in 1991 as a historical perspective on the eras of MH surgery.

Material and methods

This was a retrospective consecutive case series, and the procedures used were approved by the Institutional Review Board of each participating clinic. The procedures used conformed to the tenets of the Declaration of Helsinki. All patients had signed an informed consent for the surgery, data collection, and the use of the data for research studies.

One thousand and sixty-six eyes of 949 patients with an idiopathic MH underwent vitreous surgery from 1990 to 2016 by the same surgeon (NO). Thirty-four eyes of 25 patients were excluded because the follow-up period was <1 year. Thus, this study included 1032 eyes of 924 patients. Eyes with previous retinal detachment, vitreous surgery, cystoid macular edema from any cause, and traumatically induced holes, and proliferative diabetic retinopathy were excluded. All participants underwent comprehensive ophthalmologic examinations including measurements of the refractive error, best-corrected visual acuity (BCVA) measured with a standard Japanese chart in decimal units, axial length measurements, slit-lamp examinations, measurement of the intraocular pressure with a Goldmann applanation tonometer, and dilated indirect slit-lamp biomicroscopy with or without contact lenses. After 1998, optical coherence tomography (OCT) was used to confirm the presence of a full-thickness MH.

Of the 1032 eyes, 672 eyes (65.1%) were of women, the mean age was 65.7 years (range, 23 to 87 years), the mean decimal visual acuity was 0.16 (range, 0.01 to 1.0), the mean axial length was 23.37 mm (range, 20.33 to 30.72 mm), the size of the MH was 0.28 disk diameter (DD) (range, 0.1 to 0.7 DD), the mean hole duration was 9.9 months (range,1 to 200), and the mean follow-up period after the surgery was 81.5 months (range,12 to 330).

The procedures included phacovitrectomy for patients whose age was ≥40 years, removal of the posterior hyaloid membrane and epiretinal membrane when present, and SF6 gas tamponade with 1 week face-down positioning. After 1998, ILM peeling was generally performed in a range of 2- to 3-DDs around the MH. We performed debridement of the retinal pigment epithelium for large or persistent MHs.[21] ILM peeling was initially unstained[18], but later Indocyanine green (ICG) staining[19] or triamcinolone acetonide (TA)[20] were used to make the ILM more visible.

All surgeries were classified into four periods based on the year of initial surgery; the first period was 1990～1995 (n=222), the second period was 1996 ～ 1999 (n=327), the third period was 2000 ～ 2004 (n=234); and the last period was 2005～2016 (n=249).

The decimal BCVAs were converted to the logarithm of the minimal angle of resolution (logMAR) units for the statistical analyses. Geometric averages were used for the mean of the decimal BCVA. An increase or decrease in the visual acuity was defined as a change greater than 0.2 logMAR units.

Statistical analyses

Numerical data between two periods were analyzed by paired t tests. Comparisons between numerical data between each period were analyzed using an analysis of variance with a post hoc test by the Scheffe procedure. Categorical variables were analyzed using the Chi-square test. Multiple regression analyses were performed to examine the effects of hole duration and ILM peeling on the rate of the initial closure and final visual acuity. Statistical analyses of the data were performed using Stat View software version 5.0 (SAS Institute, Inc, Cary, North Carolina, USA). A P <0.05 was accepted as statistically significant.

Results

The preoperative characteristics of the studied eyes are shown in Table 1. With time, hole duration became shorter, the holes were smaller, and the BCVAs were better. The frequency of phakic eyes, posterior vitreous detachments (PVDs), and epiretinal membrane (ERM) decreased over the 20 years period. Significant differences were observed between the periods.

The distribution of preoperative visual acuity is shown in Table 2. The frequency of a preoperative decimal BCVA <0.1 was 24.8% in the first period and 17.7% in the last period. The frequency of preoperative BCVA better than 0.3 was 21.2% in the first period and 41.8% in the last period. The frequency of eyes with good visual acuity increased with time. Significant differences were observed between the periods.

The surgical procedures performed are shown in Table 3. After 1998, ILM peeling became routine. The surgical outcomes are shown in Table 4. The initial closure rate improved from 61.3% to 96.4%, and the reopening rate decreased. The incidence of postoperative retinal detachments remained unchanged at around 3%. Significant differences were observed between the periods.

Table 1 Preoperative characteristics of the study eyes

	First	Second	Third	Last
	1990-1995	1996-1999	2000-2004	2005-2016
	(n=222)	(n=327)	(n=234)	(n=249)
Age (y)	65.3 ± 8.2	65.7 ± 8.6	65.4 ± 7.3	66.3 ± 7.3
Female	151 (68.0)	221 (67.4)	156 (66.7)	144 (57.6)
Visual acuity				
Decimal [a]	0.13	0.15	0.17	0.19
LogMAR	0.90 ± 0.35[b]	0.82 ± 0.33[c]	0.77 ± 0.36	0.73 ± 0.37
Hole size (DD)	0.33 ± 0.12[d]	0.28 ± 0.12[d]	0.25 ± 0.12	0.24 ± 0.13
By hole size				
0.2DD≧	56 (25.2)[d]	131 (40.1)[d]	121 (51.7)	142 (57.0)
0.3-0.4DD	129 (58.1)[b]	175 (53.5)	103 (44.0)	87 (34.9)
0.5DD≦	37 (16.7)[d]	21 (6.4)	10 (4.3)	20 (8.0)
Hole duration (m)	15.1 ± 22.7[b]	10.6 ± 23.9	8.2 ± 21.5	6.1 ± 15.7
Phakia	211 (95.0)[b]	310 (94.8)[b]	210 (89.7)	190 (76.3)
PVD	84 (37.8)[d]	84 (25.7)	62 (26.5)	66 (26.5)
ERM	110 (49.6)[d]	111(33.9)	82(35.0)	83 (33.3)
Follow-up (m)	81.3 ± 63.1	79.8 ± 59.8	88.4 ± 61.4	77.3 ± 47.6

DD=disk diameter. [a]geometric average
PVD=posterior vitreous detachment
ERM=epiretinal membrane

Data are expressed as numbers(%) or means±standard deviations.
[b]P<0.01 compared with third period and last period
[c]P<0.01 compared with last period
[d]P<0.01 compared with the other periods

Table 2 Initial surgical procedures

	First 1990-1995 (n=222)	Second 1996-1999 (n=327)	Third 2000-2004 (n=234)	Last 2005-2016 (n=249)
Vitrectomy system				
20gauge	222 (100)	327 (100)	234 (100)	190 (76.3)[a]
25gauge	0	0	0	58 (23.3)[a]
27gauge	0	0	0	1 (0.4)
Additional procedures				
ILM peeling	0[a]	69 (21.1)[a]	232 (99.1)	248 (99.6)
No staining	0	69 (100)	41 (17.7)	0
ICG	0	0	113 (48.7)	7 (2.8)
TA	0	0	78 (33.6)	240 (96.8)
BBG	0	0	0	1 (0.4)
RPE debridment	37 (16.7)[a]	30 (9.2)[a]	0	0
RPE debridment with ILM peeling	0	11**(3.4)[a]	1**(0.4)	0

ILM=internal limiting membrane
ICG=indocyanine green
TA=triamcinolone
BBG=briant blue green
RPE=retinal pigment epithelium
Data are expressed as numbers (%).
[a]P<0.01 compared with the other periods

The visual outcomes are shown in Table 5. There was a significant difference between the preoperative and one-year postoperative BCVA in all periods (all, P <0.0001). There was also a significant difference between the preoperative BCVA and the final BCVA in all periods (all, P <0.0001). The final BCVA was significantly better than the one-year BCVA for the last period (P = 0.015). There was no significant difference for the other periods between 1-year BCVA and the final BCVA. The frequency of improvements of the final BCVA increased from 72.5% to 88.4% and worsening decreased from 3.6% to 1.6%.

The distribution of the final BCVA is shown in Table 5. The frequency of eyes with a postoperative BCVA ≥0.5 increased from 48.2% to 88.8%. The frequency of a decimal BCVA of ≥1.0 increased from 17.6% to 58.2%. When the preoperative MH size was ≤0.2 DD, the rate of BCVA of ≥0.5 increased from 78.6% to 97.2%. The rate of a BCVA of ≥1.0 increased from 37.5% to 73.2%. Significant differences were observed between the periods.

Table 3 Distribution of preoperative visual acuity

	First 1990-1995 (n=222)	Second 1996-1999 (n=327)	Third 2000-2004 (n=234)	Last 2005-2016 (n=249)
VA in decimal				
1.0≦	0	0	0	1 (0.4)
0.7-0.9	0[a]	4 (1.2)[b]	8 (3.4)	13 (5.2)
0.5-0.6	9 (4.1)	21 (6.4)	22 (9.4)	22 (8.8)
0.3-0.4	38 (17.1)[b]	65 (19.9)[b]	56 (23.9)	68 (27.3)
0.1-0.2	120 (54.1)	170 (52.0)	106 (45.3)	101 (40.6)
<0.1	55 (24.8)[b]	67 (20.5)[b]	42 (17.9)	44 (17.7)

Data are expressed as numbers (%).
VA = visual acuity
[a]P<0.01 compared with third period and last period
[b]P<0.01 compared with last period

Table 4 Surgical outcomes

	First 1990-1995 (n=222)	Second 1996-1999 (n=327)	Third 2000-2004 (n=234)	Last 2005-2016 (n=249)
Initial closure	136 (61.3)[a]	255 (78.0)[a]	226 (96.6)	240 (96.4)
By hole size				
0.2DD≧	53/56 (94.6)[b]	122/131 (93.1)[b]	121/121(100.0)	139/142 (97.9)
0.3-0.4DD	79/129 (61.2)[c]	121/175 (69.1)[b]	97/103 (94.2)	84/87 (96.6)
0.5DD≦	4/37 (10.8)[a]	12/21 (57.1)[a]	8/10 (80.0)	17/20 (85.0)
Complications				
Retinal break	28 (12.6)[b]	48 (14.6)	59 (25.2)[a]	23 (9.2)
Reopen	5(3.7)[d]	20 (7.8)[c]	2 (0.9)	0
RD	6 (2.7)	12 (3.7)	10 (4.3)	8 (3.3)

DD=disc diameter
RD=retinal detachment
Data are expressed as numbers (%).
[a]P<0.01 compared with the other periods
[b]P<0.01 compared with the Third period
[c]P<0.01 compared with the Third and last period
[d]P<0.01 compared with the last period

The results of multiple regression analyses on the effects of hole duration and ILM peeling on the initial closure rate and final visual acuity are shown in Tables 6 and 7. The results showed that hole duration and the ILM peeling were significantly associated with both the anatomic and visual outcomes.
The same analysis was performed for the last period. The results showed that hole duration was significantly associated with both the anatomic and visual outcomes (Tables 8 and 9).

Table 5 Visual outcomes

	First 1990-1995 (n=222)	Second 1996-1999 (n=327)	Third 2000-2004 (n=234)	Last 2005-2016 (n=249)
Preoperative				
Decimal[a]	0.17	0.2	0.23	0.26
LogMAR	0.90 ± 0.35[b]	0.82 ± 0.33[c]	0.77 ± 0.36	0.73 ± 0.37
Postoperative 1 year				
Decimal[a]	0.29	0.49	0.65	0.74

LogMAR	0.54 ± 0.47[b]	0.31 ± 0.36[b]	0.19 ± 0.33	0.13 ± 0.28
improved	161 (72.5)[b]	257 (78.6)[b]	202 (86.3)	215 (86.3)
unchanged	53 (23.9)[b]	67 (20.5)[b]	30 (12.8)	33 (13.3)
worsened	8 (3.6)[d]	3 (0.9)	2 (0.9)	1 (0.4)
Final				
Decimal[a]	0.33	0.50	0.66	0.79
LogMAR	0.49 ± 0.45[c]	0.30 ± 0.41[c]	0.18 ± 0.34	0.11 ± 0.29
improved	161 (72.5)[b]	261 (79.8)[e]	201 (85.9)	220 (88.4)
unchanged	53 (23.9)[c]	55 (16.8)[e]	30 (12.8)	25 (10)
worsened	8 (3.6)	11 (3.4)	3 (1.3)	4 (1.6)
Distribution of Final VA in decimal				
0.5≦	107 (48.2)[c]	217 (66.4)[c]	192 (82.1)[e]	221 (88.8)
1.0≦	39 (17.6)[c]	96 (29.3)[c]	102 (43.6)[c]	145 (58.2)[c]
Distribution of Final VA in decimal by hole size				
0.2DD≧				
0.5≦	44 (78.6)[b]	106 (80.9)[b]	113 (93.4)	138 (97.2)
1.0≦	21 (37.5)[b]	56 (42.7)[b]	68 (56.2)[c]	104 (73.2)
0.3-0.4DD				
0.5≦	59 (45.7)[c]	104 (59.4)[c]	76 (73.8)	74 (85.1)
1.0≦	18 (14.0)[d]	39 (22.3)[e]	33 (32.0)	40 (46.0)
0.5DD≦				
0.5≦	4 (10.8)[d]	7 (33.3)	3 (30.0)	9 (45.0)
1.0≦	0	1 (4.8)	1 (10.0)	1 (5.0)

Data are expressed as numbers (%) or means ± standard deviations.
[a]geometric average. VA=visual acuity
[b]P<0.01 compared with the third and last period
[c]P<0.01 compared with the other periods
[d]P<0.01 compared with the second and last period
[e]P<0.01 compared with the last period

Table 6 Multiple regression analysis for initial closure (All periods)

Independent Variable	β value	P value
Age	-0.12	<0.0001
Gender	-0.047	0.095
Hole duration	-0.24	<0.0001
PVD	0.023	0.42
Hole size	-0.24	<0.0001
Lens status	-0.045	0.096
Preoperative VA	0.021	0.47
Axial length	-1.02	0.0006
ILM peeling	0.26	<0.0001

Adjusted R^2=0.33 for initial closure in multiple regression (P<0.0001)
PVD=posterior vitreous detachment
VA=visual acuity
ILM=internal limiting membrane

Table 7 Multiple regression analysis for final visual acuity (All periods)

Independent Variable	β value	P value
Age	0.18	<0.0001
Gender	0.078	0.0015
Hole duration	0.22	<0.0001
PVD	-0.065	0.0092
Hole size	0.15	<0.0001
Lens status	-0.019	0.42
Preoperative VA	0.33	<0.0001
Axial length	0.076	0.0036
ILM peeling	-0.22	<0.0001

Adjusted R^2=0.48 for final VA in multiple regression (P<0.0001)
PVD=posterior vitreous detachment
VA=visual acuity
ILM=internal limiting membrane

Table 8 Multiple regression analysis for initial closure (Last period)

Independent Variable	β value	P value
Age	-0.048	0.46
Gender	0.11	0.08
Hole duration	-0.51	<0.0001
PVD	-0.056	0.36
Hole size	0.062	0.40
Lens status	0.028	0.62
Preoperative VA	0.13	0.053
Axial length	-0.076	0.24

Adjusted R^2=0.29 for initial closure in multiple regression (P<0.0001)
PVD=posterior vitreous detachment
VA=visual acuity

Table 9 Multiple regression analysis for final visual acuity (Last period)

Independent Variable	β value	P value
Age	0.19	0.0013
Gender	0.009	0.87
Hole duration	0.17	0.0037
PVD	-0.06	0.29
Hole size	0.25	0.0003
Lens status	-0.59	0.27
Preoperative VA	0.25	<0.0001
Axial length	0.12	0.05

Adjusted R^2=0.40 for final VA in multiple regression (P<0.0001)
PVD=posterior vitreous detachment
VA=visual acuity

Discussion

We evaluated the evolution of MH surgery over a 20-year period after its inception in 1991. We examined 1032 eyes operated consecutively by the same surgeon. The surgical procedures were based on Kelly's 5 steps procedure combined with cataract surgery.[14,15] Since 1998, ILM peeling has been also performed. All of the results of the surgeries were placed into four periods based on the year of the initial surgery. We studied the baseline characteristics, and the anatomical and functional outcomes during these four periods. The results suggested that the main reasons for the improvement of the MH surgery were earlier surgery and the addition of conventional ILM peeling to the Kelly's 5 steps surgical regimen.

In 1993, Wendel et al[3] published a second series of 170 eyes including the 52 preliminary eyes. In their study, 73% of the MHs were closed, the vision in 56% improved by ≥2 visual acuity chart lines, and 29% attained 20/40 or better vision. In our patients, the initial closure rate was 61.3% in the first period and 96.0% in the last period. The rate of the final BCVA being 0.5 (20/40) or better was 48.2% in the first period and 88.8% in the last period. The rate of the final BCVA being 1.0 (20/20) or better was 17.6% in the first period and 58.2% in the last period. These results indicated a significant anatomical and functional improvement of the MH surgery.

Tornambe state in 2009 that the primary reason for the better results was because the surgery was performed earlier and on smaller holes with better preoperative vision.[1] Since the genesis of MH surgery, the surgeries performed earlier had better outcomes.[2,3,14,22,23] In 2022, the Macular Hole Duration Study Group24 defined the effect of the hole duration on the outcomes in patients undergoing MH surgery from an individual participant data study of randomized controlled trials. They concluded that the hole duration was independently associated with both the anatomic and visual outcomes. This is consistent with our results and our earlier studies.[14-20]

The preoperative characteristics of the eyes by the periods showed a shortening of the hole duration, and a reduction of the hole size. These preoperative findings were associated with a greater improvement of the postoperative BCVA. These findings suggested an increase in the number of early surgeries would be better.

Tornambe[1] believe that the outcomes are better today for 3 reasons: better diagnostic instruments such as OCT which allowed clinicians a better detection of a MH leading to a correct diagnosis, a better understanding of the cause of the MH, and a more accurate depictions of the anatomic surgical results. In addition, better surgical instruments have been developed which allowed a release of vitreoretinal traction safely and predictably (posterior hyaloid dissection and ILM peeling), and they also reduced the incidence of complications. These advances gave clinicians greater confidence to operate earlier on smaller holes which resulted in better vision. Our results indicated that performing surgeries earlier was one of the reasons for the improved outcomes of MH surgery.

The "typically friable and hard to remove" membrane that Kelly and Wendel[2,3] described perhaps included the ILM and prompted others to consider removing the unstained ILM.[5,18,25] After that, improved views of the ILM made ILM peeling a safer and easier procedure.[19,20] ILM peeling is not essential for all cases[26-28], but ILM peeling has been generally performed since 1998 in this study. Both the conventional and flap methods have been recently used, but only eyes that had undergone the conventional method were examined in this study.

It is well accepted that ILM peeling is an effective additional procedure during MH surgery. The initial closure rate was ≥96% after the third period when ILM peeling was performed. This success rate is significantly higher than the first and second periods. In addition, multiple regression analyses showed that ILM peeling was a significant factor for the initial closure rate and visual outcomes. These findings suggested that ILM peeling is another reason for the improvement of MH surgery.

In the last period, the closure rate after the first surgery was 96.0% in all cases, 97.9% in eyes with a MH size of ≤0.2 DD, and 85.0% in eyes with a MH size of ≥0.5 DD. The frequency of the final decimal BCVA of 0.5 or better was 88.8% in all cases, and 97.2% in cases with a MH size of ≤0.2 DD. The frequency of the final VA of 1.0 or better was 58.2% in all cases, and 73.2% in cases with a MH size of ≤0.2 DD. In the last period the mean follow-up period after the initial surgery was 77.3 months (range, 12 to 185 months). These results may reflect the long-term outcomes of conventional ILM peeling and would be useful for evaluating the effectiveness of modified ILM peeling such as the flap method.

The type of tamponade agents and the necessity of face-down positioning are still controversial.[29-34] In 1997, Tornambe et al[29] reported that the face-down positioning was not needed as long as the gas bubble was large enough to isolate the hole from liquid vitreous with the patient upright. They also performed lensectomy on all eyes prior to or at the time of the vitrectomy and used 15% C3F8 gas tamponade. Over the last decade, the time of face-down positioning has been gradually reduced, and recently more than a dozen reports have stated that the face-down positioning is not necessary and phacovitrectomy is safe.[30] Our surgical procedures generally consisted of phacovitrectomy and SF6 tamponade with 1 week face-down positioning.

Our good surgical outcomes may be due to several reasons. Although vitrectomy with ILM peeling performed by non-experienced surgeons is a safe procedure that leads to good anatomical and functional results, very experienced surgeons may achieve even better functional outcomes.[35] In our study, all surgeries were performed by the same experienced surgeon. There was a visual benefit in the facedown positioning compared to facing forward positioning.[32] In our patients, the facedown positioning was maintained for 1 week.

Phacovitrectomy nullifies the effects of cataract progression. As a result, the postoperative BCVA reflects the postoperative foveal function. Although the reason is unclear, eyes receiving SF6 gas tended to have better visual outcomes than those receiving longer-acting gases.[36] Revision surgery for full-thickness macular holes that have failed to close after the primary surgery is associated with high closure rates and significant visual gains.[37] We tried to close the refractory MH as much as possible.

The new classification put forth by the CLOSE study group[38] indicated that large (400–550 μm) and X-Large (550–800 μm) holes can be treated highly successfully with the ILM peel and ILM flap insertion techniques, respectively. The X-Large holes corresponded to MH of 0.3-0.4 DD in our patients. In the last period of our study, the initial closure rate was 96.6%, the frequency of the final BCVA of 0.5 or better was 85.1%, and the frequency of a final BCVA of 1.0 or better was 46.0%. Our data suggest that favorable results can be obtained without using new adjuvant manipulation techniques[6-13].

This study has several limitations. The same examiner (NO) evaluated the status of the hole before and after the surgery, and OCT scanning was not widely available. A single surgeon performed the surgery with phacovitrectomy that coincided with the Kelly and Wendel' s 5-step technique, however, the study was not able to evaluate the improvements of the surgical instruments. The time periods were set in consideration of the balance of the number of cases per surgery year. However, it risks being viewed as a manipulation to fit the intended narrative. We do not address our experience or the implied value of the several new adjuvant manipulation techniques[6-13] that are generally applied to the lower prognosis cases.

Conclusion

In conclusion, our findings showed that the surgery was performed earlier and on smaller holes with better preoperative vision from a historical perspective. Hole duration is an important factor even in the era of conventional ILM peeling. We believe that only conventional ILM peeling will achieve favorable results. Further studies are needed to determine the long-term benefit of new adjuvant manipulation techniques. [6-13]

Disclosure

The authors report no conflicts of interest in this work.

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当院でのCOVID-19陽性 裂孔原性網膜剥離に対する手術経験 -COVID-19陽性患者手術時の留意点について-

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A case of operation for rhegmatogenous retinal detachment under COVID-19 infection -Tips of surgical management for COVID-19 positive case-

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＜要約＞
目的：
COVID-19陽性の網膜剥離(rhegmatogenous retinal detachment, RRD)症例の経験から新興感染症陽性患者に対する周術期管理について検討する。
症例：
５３歳男性。右) RRDに対する手術を計画したが入院前のCOVID-19抗原検査で陽性が判明した。各部署と連携し、導線を確保しての入院・手術を計画した。感染対策に配慮し、手術は陰圧室にて助手は設けず、完全防護衣で清潔となった執刀医1名と外回り看護師1名の2人体制で実施された。単独術者による手術であるための軽微なトラブルや、ゴーグルの曇りが問題となったが、安全な手術が遂行され、術後経過も良好であった。
結論：
COVID-19陽性患者のRRDに対する手術には様々な課題が残るが、スタッフとの徹底した連携の元、感染管理に注意して行うことで安全に手術が実

施可能である。

＜Abstract＞
Aim: We report a case of COVID-19-positive rhegmatogenous retinal detachment (RRD) and discuss about the operative management for this case.

Case: 53-year-old male. Surgery was planned for RRD on his right eye. But a COVID-19 antigen test prior to admission revealed a positive. We collaborated with other departments and planned admission and surgery under the communication. From the point of infection control, surgery was planned in a negative pressure room. No assistant was provided, and the surgery was performed by a two-person consisting of a primary surgeon with a full personal protective equipment and an outside nurse. Though there occurred minor problems due to the single surgeon and fogging of the goggles, the surgery was performed safely, and the postoperative course was good.

Conclusion: Although various issues remain in surgery for RRD in COVID-19-positive patients, surgery can be performed safely under the collaboration with the medical staff.

＜キーワード＞
COVID-19、網膜剥離、単独術者

＜Key Words＞
COVID-19, rhegmatogenous retinal detachment, solo surgeon.

＜本文＞

緒言

コロナウイルス感染症2019 (COVID-19) は迅速かつ広範囲に拡大したため、世界保健機関はCOVID-19をパンデミックとして宣言した[1]。世界情勢は激変し、医療も大きな打撃を受けた。COVID-19感染症の流行下において医療従事者の集団感染を予防し医療体制を維持することは重要な課題であった。受診抑制や病床ひっ迫などによる受診遅延が問題となり、多くの疾患の治療成績に影響した。感染力の強さから海外の複数の国ではロックダウンも行われていた。眼科診療ではパンデミック時であっても密接な接触が危惧される近接距離での検査・診療が要求されるため、感染症曝露のリスクが高いとされ、この影響を大きく受けた。特に網膜硝子体疾患の予後に多大な影響が出たことが多数報告されている[2-5]。

徐々に海外では制限が緩和されたが、本邦でも２０２３年５月にCOVID-19感染症は５類となり、ようやく入院・手術加療の制限が緩和された。眼科診療もコロナ前の状態に戻りつつあるがCOVID-19は消失してはおらず、COVID-19感染患者への周術期対応は依然重要である。今回、COVID-19陽性の網膜剥離(rhegmatogenous retinal detachment, RRD)症例を経験した。その中で、今後のCOVID-19など新興感染症陽性の手術患者に対する周術期管理について様々な課題が浮き彫りとなったので報告する。

症例

症例：53歳男性
主訴：右) 視力低下
現病歴：２０２x年８月初旬より右視力障害を自覚した。８月２２日、近医受診し、右) RRDを指摘された。同日、手術目的に当科紹介初診となった。
既往歴：特になし。当院初診時に発熱や咳嗽・咽頭痛はなかったが、１週間ほど前に同僚がCOVID-19陽性を指摘されていた。
所見：右)視力0.7 (矯正)
前眼部・中間透光体) 明らかな異常なし
後眼部) 下方裂孔による、増殖性変化を伴う網膜剥離を認めた(図１)

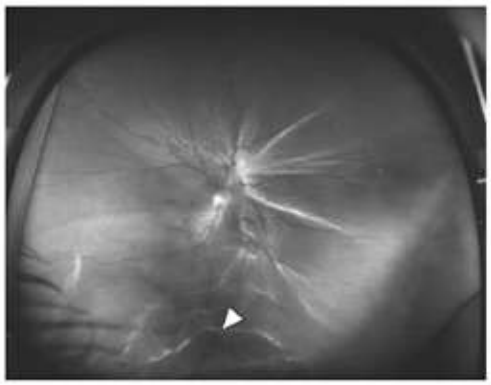

図1.

即日入院の上、局所麻酔による手術を予定したが入院前のCOVID-19抗原検査で陽性が判明した。当時はコロナ感染の第７波到来時期であり、当院手術部・感染制御部と協議し、即日入院は中止となった。入院時・手術時の導線を確保できる翌日午後の予定入院ならびに準夜帯での予定手術を計画した。

手術所見：

感染制御の観点から、手術は他科定期手術が終了した準夜帯に予定を組み、陰圧室で実施された。手術室汚染防止の観点から、使い捨てカバーを装着するなどの感染対策を行い、必要な最低限の器機のみを室内に搬入した(図２a)。眼内レンズなどの随時必要となる物品は室外のグリーンゾーンから別のスタッフが安全に配慮しながら室内のレッドゾーンへ適宜手渡しをした。医療スタッフの感染を危惧し、陰圧室への入室者は最低限として、手術助手は設けず、清潔となった執刀医1名と外回り看護師1名の2人体制で手術を実施した(図2b)。術者・看護師は通常の術衣に加えてN-95マスクと眼鏡ないしはフェイスシールドを着用した。術者は眼鏡を装用したが、術中の曇りが問題となった。

白内障手術を行い、眼内レンズを挿入した。その後、4-portでの25ゲージ硝子体手術を開始した。眼内を観察したところ、下方網膜格子状変性に生じた原因裂孔からの広範な網膜剥離と増殖性変化を認めた。硝子体切除し、後部硝子体膜剥離を作成後、圧迫しながら裂孔周囲の硝子体処理と増殖膜処理を実施した。剥離範囲が広汎であることからアーケード上方に意図的裂孔を作成し、液空気置換を行って網膜下液の排液を行った。液空気置換時、術者一人であったため機器パネル操作による設定変更を行った際に術野を離れざるを得ない場面があった。再度術野を確認したところ、空気泡による視認性の低下を認めた(図３a, b)。また、角膜浮腫も出現し、角膜上皮剥離を行って視認性を確保した(図3c)。視認性が改善したため、ガス置換を完遂し(図3d) 、原因裂孔と意図的裂孔などへの眼内網膜光凝固を実施し、シリコンオイルに置換して手術を終了した。

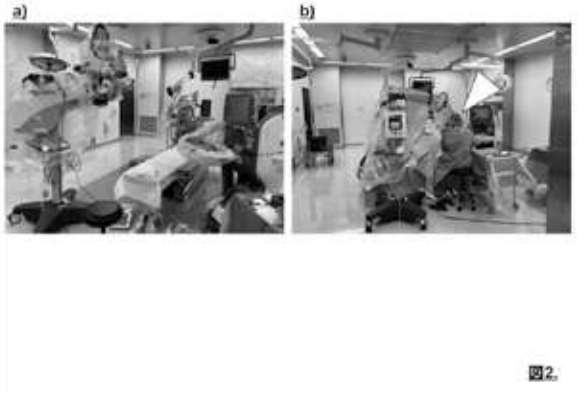

図2.

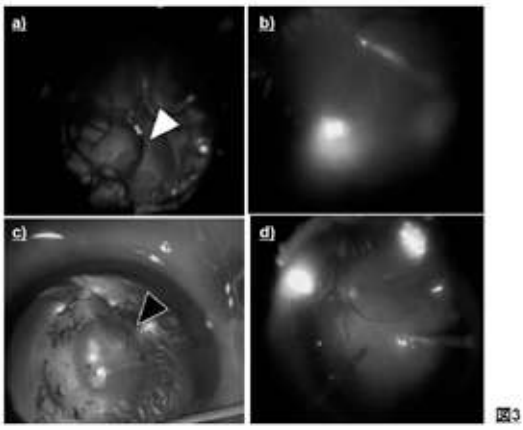

図3

術後経過：

手術終了術、術者自身が個人用防護具着用のままで眼科病棟の隔離個室まで搬送した。手術翌日、往診にて診察したところ経過良好であったため、当日に当院退院となった。無症候患者であるため、ホテル待機療養となった。療養中、電話で患者に連絡し、経過確認を行ったが、大きな自覚変化はなかった。術後５日(待機期間７日目)で療養施設からの退所となり、以後当科外来通院となっている。術２週間後の受診時には網膜復位が得られ、右視力は0.3(矯正)であった(図4)。術後４か月でシリコンオイル抜去を実施し、手術後5か月で右視力は0.7(矯正)である。

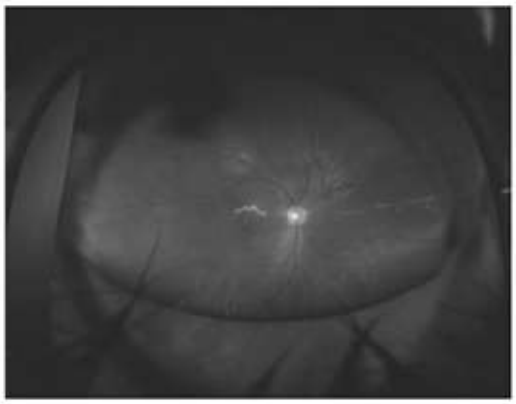

図4.

考按

コロナ禍当初、ビジョンアカデミーでは、COVID-19パンデミック時の硝子体内抗VEGF注射に関する具体的なガイダンスを提示した[6]。この中でコロナ禍においても網膜疾患を管理するための戦略として①患者と医療スタッフの双方がCOVID-19の暴露リスクを最小限にすること、②不可逆的な視力喪失のリスクが高い患者に対する治療を優先すること、③抗血管内皮増殖因子阻害薬治療レジメンを簡略化することに重点を置くべきであると結論づけている。また、各国の眼科学会が、パンデミック時の患者管理に関する眼科医向けの一般的ガイダンスを発表したが、特に米国眼科学会では様々な具体的な対策を推奨していた。外用ポビドンヨードはコロナウイルスに有効であり手術前処置に重要であること、手術用マスクとフェイスシールドなどの保護具の着用、そして必要時のN-95マスク使用が推奨されていた[https://www.aao.org/headline/alert-important-coronavirus-context. (Accessed: Oct 21, 2023)]。

硝子体手術では理論的にはエアロゾルが発生し、術者に感染が波及する可能性がある。しかし最近の小切開手術ではバルブ付きトロッカーカニューレを使用するため、発生するエアロゾルは眼内に限定される。このため、感染リスクは低いと思われ、標準的な手術用防護衣で感染対策は十分であると考えられる。また近年広まりつつある三次元ヘッドアップディスプレイシステムなどの新しいデジタル技術を使用することで、医師と患者との間の距離をとることも可能となり、予防の可能性が増す[7]。このようにCOVID-19パンデミック当初には厳重な管理が行われてきたが、その知見が集積したことや5類への移行などから2023年現在、手術のハードルは下がってきている。今回、施設内の感染拡大を防止する目的から本手術は術者一人で実施した。現在の硝子体手術はシステマティックであり、単純なものであれば一人でも十分実施可能である。しかし、本症例の執刀中の問題点として、保護眼鏡の曇りがあったこと、液空気置換やレーザー実施などのモード変更に時間を要したこと、そしてそのために術中角膜障害などが生じ、術中手順が煩雑化したことなどが挙げられる。院内感染の観点からでの選択ではあったが、手術安全性という点からは術者の技量・術眼の状態など、症例ごとに熟考が必要である。

パンデミック当初は受診と手術時期の遅延が重要な課題であった。COVID-19流行当初に英国ではロックダウンが行われた。すべての病院に対し、当局から医療抑制の指示があり、眼科では眼外傷やRRDなどの重篤な疾患に対する手術のみが行われ手術を必要とするRRD症例が減少したものの増殖硝子体網膜症や黄斑剥離を伴うRRDは増加したとされている[8]。COVID-19に感染することを恐れての受診抑制などがこの理由として考えられた。加えて、家庭医のいるプライマリー施設もほぼ閉鎖されたため、眼科専門医へのコンサルトが遅れたことも一因とされている。黄斑部を脅かすRRDは緊急性の高い眼疾患であり、重大な視力低下をもたらす。視力予後は黄斑の状態に左右され、黄斑部網膜剥離の発見や手術が遅れることで術後視力などの治療成績は悪化する[9-12]。RRDの手術時期が7日遅れると視力予後が悪くなることが報告されているが、最近の研究では、3日でも視力予後は不良となることも示唆されている[13]。このように受診や手術時期の遅延はRRDの治療成績に明らかに影響し、非復位への懸念があるため早期手術が望ましい。米国でも、当初は学会からCOVID-19陽性患者の予定手術は6週間延期すべきと推奨されていたが、パンデミック期間中にRRDを発症した患者では、治療が遅れ、術後視力の悪化や増殖性網膜症が悪化する可能性が高かった[14]。また加齢黄斑変性の治療が大幅に遅れ、短期転帰が悪化したことも報告されている[2]。日本眼科学会が示す「新型コロナウイルス感染症流行時の眼科手術に対する考え方」ではRRDは要緊急対応疾患に分類される[https://www.nichigan.or.jp/Portals/0/resources/news/069.pdf (Accessed: Oct 21, 2023)]。ロックダウンやパンデミック時に黄斑剥離を伴うRRDが増加した事実から考えても、やはり早期手術が望ましい。本症例加療当時の待機期間は有症状者で10日間、無症状者で7日間であった。無症状COVID-19陽性であったため、本来は7日間待機したのちに手術入院となるが、要緊急対応疾患に分類されるため院内各部署と協議した上で、翌日入院となった。本症例では初診時、黄斑剥離はなく、数日の待機は不可能ではなかったかもしれない。今回、我々は比較的早期に手術を実施することができたが、それでも入院時間や手術開始時間の変更、搬送などスタッフに与えた影響は無視できないものであった。この点から、今後新たに生じる可能性のある新興感染症流行下においても手術時期の決定は病勢や医療情勢・スタッフへの負担増加などを踏まえての判断が必要となる。

今回、スタッフへの感染拡大を恐れ、単独術者で執刀したが、これに伴い手技が煩雑となった。現在は5類となり待機期間や隔離が形骸化されたが、入院取り扱いをどうするか、施設ごとに指針があり完全に統一はされていない。すべての入院患者に対する抗原検査を行う施設はほぼなくなり、発熱の確認程度で入院してくる従来の形になった現在では、発熱や風邪症状ではじめて抗原検査を行うことがほとんどである。

このため、院内発生症例に対してどのように取り扱うかが現実的な課題である。今後、COVID-19に類似した新興感染症が流行する危険性も懸念されており、また入院中にCOVID-19陽性が判明したRRDや外傷など準緊急・緊急手術が必要な症例もあるかもしれない。今回のコロナ禍で我々が得た知見を基に、秩序だった入院・手術を計画できるよう、配慮することが重要である。国内でのCOVID-19患者に対するRRD手術の報告は他にもあり[15]、今回の経験も含めた治療留意点を示す。

RRDの手術時期延期は術後視力不良に直結し、早期対応と手術が必要である。進行を想定し、適切なタイミングの治療介入が重要であり、スタッフとの徹底した連携の元、単独術者で硝子体手術を実施することが可能であった。5類となった現在、COVID-19陽性患者の入院・手術を計画する場面が依然あるが、実際にCOVID-19陽性患者に対する手術を行う中で様々な課題を考えていく必要がある。

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＜表＞

表. 新興感染を伴う網膜剥離患者の治療に関する留意点

・症例によっては隔離期間での手術待機も考慮する
・黄斑部剥離に至ったものには早期の手術が望ましい
・院内各部署と連携し、搬送時や病棟での感染拡大防止に努める
・手術は陰圧室で実施し、術者やスタッフへの感染に留意する
・手術は完全防護衣着用に準じた防護で行う
・フェイスシールドなどで飛沫に留意するが、曇りに留意が必要である
・器具の受け渡しにはグリーンゾーンとレッドゾーンの区別に留意する
・単独術者により実施も可能だが、難易度・技量により計画する

＜利益相反＞

水谷凜一郎、原田純直、天満有美帆、佐々木拓:
なし

杉本昌彦：
経済的支援）
ノバルティスファーマ、中外製薬株式会社、アルコンファーマ、バイエル薬品
報酬）
ノバルティスファーマ、アルコンファーマ、参天、興和創薬、千寿製薬、バイエル薬品、わかもと製薬

中条慎一郎：
報酬）
参天製薬、ノバルティスファーマ、参天製薬、中外製薬、バイエル薬品

松井良諭：
経済的支援）
バイエル薬品、中外製薬
報酬）
AMO、参天製薬、ノバルティスファーマ、日本アルコン、バイエル薬品

松原 央：
経済的支援）
中外製薬
報酬）
参天製薬、千寿製薬、ノバルティスファーマ、バイエル薬品

近藤峰生：
経済的支援）
ノバルティスファーマ、日本アルコン、参天、大塚製薬、千寿製薬、HOYA、ファイザー、AMO、興和、バイエル薬品
コンサルタント）
千寿製薬、小野薬品、第一三共
報酬）
ノバルティスファーマ、アルコン、参天、サノフィ、興和、大塚製薬、千寿製薬、バイエル薬品、アッビィ、AMO、ファイザー、第一三共

＜図の説明＞

図1.初診時所見
初診時の眼底写真を示す。下方裂孔（白矢頭）と増殖性変化を伴う網膜剥離を認める。

図2.周術期の室内
周術期の室内を示す。陰圧室で使い捨てカバーを装着し、必要最低限の器機のみ搬入されている(a)。完全防護具で清潔となった執刀医1名が執刀している(b, 白矢頭)。

図３.術中所見
術中所見を示す。液ガス置換中、空気泡による視認性低下を認めた(a)。手術継続したが、角膜浮腫も出現したため視認性が著しく低下した(b)。角膜上皮剥離を行い、視認性を確保し(c)、ガス置換を完遂した(d) 。

図4.加療後所見
術後２週間の眼底写真を示す。シリコンオイル下に網膜復位が得られている。

抄録

微小浸潤癌の検討

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窪田智行、雄谷純子

乳癌取扱規約では浸潤径が１mm以下の浸潤癌を微小浸潤癌(pT1mi)として扱っているが、乳癌診療ガイドラインでは特に治療法に言及しているわけでもなく、NCCNガイドラインにおいても浸潤径5mm以下として治療法を述べているが、1mm以下に言及した記載はない。今回当院における微小浸潤癌の特徴について検討した。

＜方法＞

2010年1月より2021年12月に当科での原発性乳癌1553例中、手術標本での浸潤径により分類し微小浸潤癌53例と他のグループと比較した。尚、術前化療症例は化療前のUS径で分類した。

＜結果＞

微小浸潤癌(pT1mi) の発見契機は、検診37例,自覚16例で、検診では、MMG:28例、US:5例、触診、自覚症状:4例、自覚群ではしこり:7例、乳房痛:3例、乳頭皮膚の陥凹:1例、血性乳汁分泌:4例であった。MMG主所見は検診群で腫瘤5例(9.4%)、石灰化35例(66.0%)、FAD 3例、構築の乱れ5例、異常なし5例であった。US所見は、腫瘤11例(22.9%)、低エコー域29例(60.4%)、構築の乱れ1例、所見なし7例(27.5%)であった。手術はBp14例、Bq1例、Bt38例、リンパ節転移は6例に見られ1個3例、2個3例であった。サブタイプはluminal A 27例、luminal B 1例、luminal HER2 5例、HER2 13例 (24.5%)、Triple negative 7例であった。術前化療例はなく、術後補助療法はホルモン療法17例、化学療法10例 (うち分子標的治療8例) を施行。無治療26例見られた。術後4例に再発 (局所2例、腋窩リンパ節2例) がみられたが、全例生存中である。

＜まとめ＞

微小浸潤癌は、HER2陽性乳癌の比率が24.5%と高く (t1a 3.7%、t1b 2.1%、t1c6.4%、t2 19.0%、t3 12.5%)、HER2陽性乳癌の早期浸潤の影響が推測された。微小浸潤癌でも4例に再発例を認め2例は局所再発であったが、2例の腋窩リンパ節再発例はともに補助療法としてホルモン療法中の再発であり、微小浸潤癌でも十分な術後観察が必要であると思われた。

2024.7.11 ～ 7.13　仙台

当院におけるOncotype Dx導入の実際

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窪田智行、雄谷純子、菅沼翔子

Oncotype Dxが2023年9月より保険適応となり、乳癌診療ガイドラインにもホルモン受容体陽性HER2陰性乳癌においての術後化学療法の指針の一つとなっているが、実際の臨床の場でどのように使われ、また結果により治療にどのように影響を与えているのかを自施設のデータをもとに検討した。

＜方法＞

当院でOncotype Dxの使用を始めた2013年9月より2024年1月までの89症例を対象とした。

＜結果＞

年齢は25-83歳 (平均55.6歳) で、50歳以下は37例であった。病期は0：3例、Ⅰ：60例、Ⅱ：26例で、Oncotype DxのRecurrence Score(RS)は0から63(平均17.8)、RSで0-17をRS低値、18-30をRS中等度、31以上をRS高値とすると、RS低値が53例、RS中等度が21例、RS高値が15例あり、それぞれのKi67平均値が6.9、9.4、16.8であった。リンパ節転移症例がそれぞれ37例、7例、6例とリンパ節転移陽性症例でも必ずしもRS高値とならない結果であった。治療としては、RS低値群は全てホルモン療法、RS中等度群で18例にホルモン療法、3例で化学療法の追加を行なっており、またRS高値群では13例に化学療法の追加を行い、2例はホルモン療法のみとなったが、この2例は高齢者(70歳、74歳)であった。再発は3例あり、RS低値1例、RS中等度1例、RS高値1例で、RS低値、RS中等度の症例はリンパ節転移あり50歳以下でRxPONDER試験で化学療法の上乗せ効果が示されている症例であった。

＜まとめ＞

Oncotype Dxの結果は、RS高値群でKi67が高い傾向はあったが、RS低値群でもリンパ節転移症例を多く見た。RS低値、RS中等度でも再発する症例があり、閉経前、リンパ節転移陽性症例では、化学療法の追加を考慮するする必要があると思われた。

2024.9.7 ～ 9.8、富山

Early balloon kyphoplasty for acute osteoporotic vertebral fracture

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[Background]

In the face of our aging society, treating osteoporotic vertebral fractures poses a significant challenge in spinal surgery and general orthopedics. Standard approaches involve conservative treatment like medication, rehabilitation, or corset. In 2011, balloon kyphoplasty (BKP) gained approval for cases resistant to conservative treatments, leading to a rise in BKP procedures. These fractures are often linked with severe pain, significantly impacting the activities of daily living (ADL) and quality of life (QOL) in the elderly. Prolonged hospital stays contribute to increased caregiver costs, imposing a significant burden on social resources. Recent reports highlight early BKP surgery for acute vertebral fractures, anticipating early ADL recovery. However, uncertainties persist regarding treatment outcomes and complications.

[Subjects and Methods]

We analyzed cases undergoing BKP surgery for osteoporotic vertebral fractures at our hospital from December 2021 to December 2022, excluding cases involving spinal tumors, multiple vertebral surgeries, and reoperation. Patient characteristics, complications, adjacent vertebral fractures, and osteoporosis treatments were assessed preoperatively and at the 3-month postoperative mark. The cases were categorized into the early group (undergoing surgery within 4 weeks of injury) and the delayed group. Statistical analyses included chi-square tests, t-tests, and logistic regression analysis to identify risk factors for adjacent vertebral fractures.

[Results]

Of the 82 cases undergoing BKP during the study period, 65 cases (50 in the early group, 15 in the delayed group) were analyzed after excluding one tumor case, six cases of multiple vertebral surgeries, and ten cases lost for follow-ups. The early group had a significantly shorter surgical time (22.7 ± 5.6 vs. 29.3 ± 11.1, P = 0.003), while cement volume showed no significant difference (7.3 ± 2.5 vs. 7.5 ± 2.5, P = 0.67). The incidence of adjacent fractures was lower in the early intervention group than the delayed group (20% vs. 40%, P = 0.12), with no significant differences in occurrence period and additional surgeries between the groups (P = 0.53 and P = 0.24). Adjacent vertebral fractures occurred in 16 cases (25%), and the group with adjacent fractures had longer surgical waiting days compared to the group without (25.5 ± 51.5 vs. 59.3 ± 107, P = 0.09). Logistic regression analysis did not identify significant factors related to adjacent fractures.

[Discussion]

It is emphasized that BKP within 4 weeks of injury may reduce the incidence of adjacent fractures, but the risk remains high. Early intervention in osteoporosis treatment for fracture prevention is considered desirable.

Possible relationship between early-stage Lewy pathology and late-onset epilepsy of unknown cause, particularly transient epileptic amnesia (TEA) and TEA complex syndrome (TEACS)

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【Background】

Transient epileptic amnesia (TEA) is a type of temporal lobe epilepsy whose main symptom is recurrent amnesia attacks. Patients with TEA often demonstrate two other types of memory symptoms: accelerated long-term forgetting (ALF) and autobiographical amnesia (AbA). We presented two clinical cases in which the patients showed symptoms of ALF and/or AbA without suffering any type of epileptic seizure, including

TEA attacks. Based on these cases and a literature search, we proposed a new clinical entity, which we named 'transient epileptic amnesia complex syndrome (TEACS)', as an epilepsy-related disorder. Recently, several studies of the relationship between late-onset epilepsy of unknown cause (LOEU) and early-stage Alzheimer's disease have been published. However, there have only been a few reports about the relationship between LOEU and early-stage Lewy body disease (LBD).
【Methods】
The clinical courses of three of our cases, in which the patients showed the symptoms and clinical findings of TEA/TEACS and early-stage LBD, are presented.
【Results】
Due to word limits, the cases will be presented at the conference venue.
【Discussion】
From these three cases, we proposed a hypothesis that early-stage Lewy pathology can cause LOEU and induce TEA-related symptoms, and that TEA-related symptoms may be prodromal symptoms of LBD. In other words, some TEA/TEACS cases are caused by early-stage Lewy pathology.

第57回　日本てんかん学会　福岡　2024年9月12日（木）～14日（土）

Expanding the concept of epilepsy: "non-paroxysmal epilepsy-related disorders"

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Background:
Patients with transient epileptic amnesia (TEA) often demonstrate two other types of memory symptoms: accelerated long-term forgetting (ALF) and autobiographical amnesia (AbA). In our previous reports, we presented two clinical cases in which the patients showed symptoms of ALF and/or AbA without suffering any type of epileptic seizure, including TEA attacks. Based on these cases and a literature search, we proposed a new clinical entity, which we named 'transient epileptic amnesia complex syndrome (TEACS)'. We also proposed a new type of neurocognitive disorder, which we named 'epileptic cognitive impairment resembling Alzheimer's disease (ECI-A)'.
Methods and Results:
The clinical profiles and characteristics of two cases of TEACS and one case of ECI-A are presented. Based on the clinical courses of these cases, pathological hypotheses regarding TEACS and ECI-A are discussed, and the importance of clearly recognizing a new concept in epileptology is emphasized. Informed consent to publish the patients' clinical information was obtained from the patients and their families. Minor modifications to the data, which did not interfere with the study's findings, were made to preserve the patients' anonymity. The study was approved by the ethics committee of Kamiiida Daiichi General Hospital (Nagoya, Japan).
Discussion:
We consider that at least two non-paroxysmal and chronic epilepsy-related disorders (TEACS and ECI-A) exist. The two disorders are considered to be caused by continual excessive neuronal discharges that are not sufficient to give rise to clinical seizures. The establishment of these new entities would open up therapeutic possibilities for such non-paroxysmal and chronic epilepsy-related disorders.

第37回　日本総合病院精神医学会　熊本　2024年11月29・30日

複数の多職種チームの連携：認知症せん妄サポートチームと緩和ケアチームの臨床実践

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佐藤真嗣[2)3)6)]、岡島明子[2)6)]、鵜飼克行[1)5)6)]

1）総合上飯田第一病院　老年精神科
2）総合上飯田第一病院　緩和ケア外科・緩和ケアセンター
3）総合上飯田第一病院　看護部（認定看護師）
4）総合上飯田第一病院　薬剤部
5）総合上飯田第一病院 認知症せん妄サポートチーム
6）総合上飯田第一病院　緩和ケアチーム

【背景】
当院の老年精神科と緩和ケアチーム（PCT）は2008年に創設。2010年に老年精神科スタッフが中心となって、認知症せん妄サポートチーム（DDST）を創設し、2012年にはPCTスタッフによる緩和ケア外科と緩和ケアセンターが誕生した。当院には7つの組織横断的な多職種連携チームがあるが、近年DDSTとPCTが連携して入院患者（担癌かつ認知症）の診療にあたる機会が増えてきた。DDSTとPCTの連携に、どのような意義があるのか、検討する。
【方法】
自験症例を提示する。患者には身寄りがなく、現時点ですでに死亡している。本発表に関して当院の倫理委員会の承諾を得た。
【結果（症例提示）】
70代男性。独居。糖尿病・パニック障害・頭部血管肉腫・慢性腎不全（血液透析）の既往あり。血管肉腫は他院で診断され、病状進行から積極的な治療を希望せず、当院緩和ケア科を紹介され受診。希望に沿って可能な限り在宅生活（訪問診療）の方針となった。X年、全身倦怠感と食欲不振のため、当院腎臓内科に入院し、PCTも活動を開始した。数日後、せん妄を疑う症状が出現したため、DDSTにも介入依頼があった。DDSTは非薬物療法を主に対応したが、せん妄症状は継続し、改善が見られなかった。そこで、腎臓内科主治医・PCT・DDSTが協同して会議を実施した。肉腫の病態が最終段階にあり、せん妄が遷延する原因も身体的要因が大きく、身体的心理的緩和ケア・せん妄対策などTotalな視点での対応が必要と判断され、PCTが統括的に対応することになった。DDSTはPCTと協働し、せん妄への薬物療法も実施された。この約4週間後、患者は死亡したが、比較的穏やかな経過であった。
【考察】
患者の生活状況・価値観は多様化し、抱える問題も複雑化して、対応にも苦慮するケースが増えている。これらに対応できるように、多職種協働するチームの連携が必要となっている。本症例では、PCTとDDSTが連携したことで、最善の医療を提供できたと考える。

第37回　日本総合病院精神医学会　令和6年11月　熊本

総合病院における認知症診療の意義：抗アミロイドβ抗体薬治療を含めて

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総合上飯田第一病院
1）老年精神科、
2）看護部（認知症看護認定看護師）

【背景】
昨今の総合病院は、救急医療・急性期医療・専門的医療を担うことが主要な任務とされる。このため、基本的な入院期間は2週間程度で、リハビリ目的での入院継続は認められない。新規の外来受診にも高いハードルが設定されており、かかりつけ医からの紹介状が無ければ、実質的に新規受診は困難である。さらに、診断が確定し病状が安定したら、総合病院での外来診療の継続は認められず、かかりつけ医やクリニックに逆紹介されることが通常である。このような状況下、総合病院において期待されるべき認知症診療はどのようなものか、考察してみたい。
【方法】
当院における認知症診療の実際を紹介して、認知症診療の意義を考察・抽出する。
【倫理的配慮】
本発表に際して、症例提示の患者家族および当院の倫理委員会の承諾を得た。
【結果・考察】
総合病院における認知症診療の意義は以下の如くである。1．各科医師と連携して症状性・器質性の認知障害（治療可能な認知症）が比較的容易に発見・診断・治療できる。2．各科医師や薬剤師と連携して複数の医療機関から処方されている薬を把握・整理でき、副作用や医原性認知障害のリスクを軽減できる。3．各種の療法士や歯科衛生士と連携して様々な生活機能評価が容易に実施できる。4．管理栄養士・歯科衛生士・言語聴覚士と連携して口腔ケア指導・嚥下機能訓練・食事指導が容易に実施できる。5．その他（抗体薬治療など）。

第43回　日本認知症学会　福島　2023年11月21～23日

慢性的な低カルシウム血症による認知機能障害が疑われた1例：症例報告および文献的考察

鵜飼克行
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【目的】
高カルシウム血症や低カルシウム血症（低Ca血症）が、精神神経症状を惹起することはよく知られている。重度の低Ca血症での精神神経症状としては、筋痙攣、四肢の知覚障害、意識障害などが挙げられる。慢性的な軽度の低Ca血症による認知機能への影響は、あり得るだろうか？
【方法】
慢性的低Ca血症による認知機能障害が疑われた自験症例を提示する。文献的な考察も行う。
【倫理的配慮】
患者および家族から学会発表と論文化の同意を得た。
【結果】
症例は80歳代女性。当科初診の約7か月前に甲状腺腫瘍のため甲状腺全摘出術・副甲状腺自家移植術を受けた。その４～５か月後から、意欲低下・ゆううつ気分などの精神症状、下肢の痙攣・筋肉痛などの神経症状が出現した。もの忘れや失算も認められ、当科を初診した。MMSEは25点。生化学的検査では、血清のintact PTHとVit Dの値は正常であったが、低Ca血症を認めた。他院の整形外科から骨粗鬆症に対してビスフォスフォネート製剤（BP剤）が処方されていたため、甲状腺全摘出術に伴う副甲状腺の相対的な機能低下と薬剤性の低Ca血症を疑った。BP剤の中止とCa・Vit D製剤の補充にて、精神神経症状・認知機能は著明に改善した。
【考察】
慢性的な低Ca血症による認知機能への影響についての文献はほとんど無いが、重篤な低Ca血症が意識障害を呈し得ることを鑑みれば、軽度の低Ca血症でも認知障害を惹起し得ることは容易に想像できよう。低Ca血症の原因には複数あるが、実際の症例を通して、低Ca血症の原因の鑑別、低Ca血症による直接的な認知障害の特徴、他の興味深い精神症状、臨床において注意すべきことなど、幾つか教訓を得たので報告する。
本研究は公益社団法人日本老年精神医学会の利益相反委員会の承認を受けた.

第39回　日本老年精神医学会　札幌

シンポジウム11「てんかんと認知症の双方向的関連性：新たな病態理解を求めて；高齢初発てんかんと認知症性疾患の鑑別」物忘れ外来で鑑別すべきてんかん性病態

鵜飼 克行
総合上飯田第一病院　老年精神科

一過性てんかん性健忘（TEA）は、健忘発作エピソード（TEA発作）を主症状とする側頭葉てんかんの特殊型である。TEAは、加速的長期健忘（ALF）や自伝的健忘（AbA）と呼ばれる慢性的な記憶障害を合併することが多い。一方、明瞭なALF/AbAは認められるが、主症状であるはずのTEA発作が認められない症例も存在する。演者らは、このような症例を、TEAと深い関連があるという推測を基に、「一過性てんかん性健忘複合症候群（TEACS）」と呼ぶことを提唱した。また、抗てんかん発作薬が著効する認知障害の症例が存在し、これを「アルツハイマー病類似てんかん性認知障害（ECI-A）」と呼ぶことも提唱した。
TEACSおよびECI-Aは、臨床上のてんかん発作（TEA発作・焦点意識減損発作・その他の発作）が全く認められなくても、慢性的かつ非発作性の臨床症状を呈することが特徴である。これらの症状は、臨床的には認識されていない何らかの発作（例えば、睡眠中の発作）が原因で生じていると考えることは難しい（というより、ほぼ不可能であろう）。これらの症状の病態仮説として、演者らは「発作にまで至らない神経細胞の継続的な異常放電（の積み重ね）が、ALF/AbAやECI-Aで認められる臨床症状を惹起せしめる」と推測している。すなわち、TEACSとECI-Aは、定義上の厳密な意味での「てんかん」には該当しないが、「神経細胞の継続的な異常放電」が原因と考えられることから、「てんかん関連性疾患」であると言えよう（にも係わらず、「物忘れ外来」を受診することになる）。
TEAやTEACSは、近時記憶障害が認められないため「正常」と診断され、見逃される危険がある。また、レビー小体型認知症（DLB）の症状に類似することもあり、誤診される、あるいは鑑別困難な場合がある。ECI-Aは、その名が示すとおり、アルツハイマー病（AD）と非常によく似た臨床症状を呈するため、ADと誤診されやすい。
「認知障害（TEACSやECI-A）」と「てんかん性病態」の関連性は、上記のように、①てんかん性病態が、少なくとも2種類の認知障害を引き起こす、②引き起こされた認知障害の臨床症状が、他の認知症性疾患（ADやDLB）と類似する、というだけでなく、さらなる関連性も疑われる。「認知症はてんかんの原因となる」ことは、古くから当たり前のことにされているが、それはシビアな脳器質性の変化をきたした進行期での話であろう。近年、「極めて早期のAD病理が、原因不明の高齢初発てんかんの原因の一つではないか」という仮説が提出されている。2019年に演者らは、TEA/TEACS自験2症例が、ともに極めて早期のレビー小体病（LBD）を合併していると思われたことを根拠に、「早期のAD病理だけでなく、早期のLewy病理も、TEA発作やALF/AbAを惹起し得る可能性」を指摘した。
本講演では、早期のLBD/DLBを合併するTEA/TEACSの自験4症例とECI-Aの自験1症例を提示する予定である。これからの老年精神科医には、「物忘れ外来で鑑別すべきてんかん性疾患」として、（微妙な継続する焦点意識減損発作や非けいれん性てんかん重積に加えて）TEA・TEACS・ECI-Aの3つの病態を認識し、「見逃し」「誤診」のピットフォールに陥らないこと、「認知障害」と「てんかん性疾患」との合併・双方向的関連性（相互浸透性）を視野に入れた診療を心がけること、これらが重要であることを強調したい。

第39回　日本老年精神医学会　2024　札幌

シンポジウム21「一過性てんかん性健忘（TEA）をめぐって」4.TEAとTEACSのてんかん学における位置づけ

鵜飼克行
総合上飯田第一病院　老年精神科

一過性全健忘（TGA）と呼ばれる健忘発作の存在は、1950年代から知られていた。TGAの原因は、現在も未だはっきりしていないが、1990年代になって、その中からてんかん性機序が原因と考えられる一群が抽出され、一過性てんかん性健忘（TEA）と呼ばれるようになった。TEAには、極めて特徴的な2種類の慢性的な記憶障害が高率に合併することも明らかとなった。その一つはAccelerated long-term forgetting（ALF：加速的長期健忘）であり、もう一つはAutobiographical amnesia（AbA：自伝的健忘）である。ALFとは、忘れ難い体験を、その数週から数か月後には忘れてしまう現象である。例えば、患者の近時記憶は障害されていないにもかかわらず、数週間前に友人と旅行をしたことを記憶していない。AbAとは、発病以前の忘れ難いはずの出来事を思い出せない現象である。つまり、疾患としてのTEAは、少なくとも3種類の記憶障害（TEA発作・ALF・AbA）を呈し得る訳である。このうちTEA発作は、てんかん発作が原因と思われる発作性の病態であるが、ALFとAbAは非発作性の慢性的な病態であり、それらの原因は不明である。
演者らは2010年代後半に、TEA発作や他の発作が全く認められないにもかかわらず、ALF/AbAを認める2症例を報告し、これらの特異な症候群症例を含める概念として「TEA複合症候群（TEA complex syndrome: TEACS）」を提唱した。TEACSには、以下のような特徴が認められる。
1）臨床症状の出現に、てんかん発作は必須ではない、
2）抗てんかん発作薬が著効する、
3）しばしば脳波で側頭葉に突発性異常波が観察される。
これらの特性から演者らは、ALF・AbAの慢性的・継続的臨床症状の発現には、何らかのてんかん性機序が関与しているが、同時に「たとえ発作にまで至らない程度の、継続的な神経細胞の異常放電であっても、慢性的で持続的な臨床症状を引き起こし得る」という仮説を提唱した。なぜなら、遠隔記憶障害であるALF（前向性健忘）とAbA（逆向性健忘）を、てんかん発作のみを原因として説明することは、不可能と考えられるからである。
この仮説が正しければ、現在のてんかん学、あるいはてんかん診療における、「てんかんの診断には、少なくとも1回のてんかん発作が必要」という常識を、再検討する必要が生じるのではないだろうか。この仮説を基に演者らは、この新たに認識された病態から生じる疾患群を、仮称ではあるが、「非発作性てんかん関連性障害（non-paroxysmal epilepsy-related disorder: NPED）」と呼ぶことを提唱している。つまり、てんかん関連病態には、いわゆるEpilepsyとNPEDの2種類（2段階）が存在することを意味する。「一度も発作には至らない程度の継続的で過剰な神経細胞の異常放電が、慢性的な臨床症状を呈する疾患を惹起する」のであれば、この新しいカテゴリー概念は、てんかん治療学に大きな影響を及ぼすことが予想される。

第57回　日本てんかん学会　福岡　2024年9月14日（土）

演題名：人工骨頭全置換術術後脱臼に対して早期にADL訓練を行った事例

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木全千佳51642（共同演者）[1]、松岡友絵62308（共同演者）[1]

1）総合上飯田第一病院　リハビリテーション科

【序論・目的】
大腿骨近位部骨折は日本で年間約20万例発生しており、人工物置換術式での脱臼発生率は1～5.6％と報告されている。今回、我々は、脱臼後のリハビリで早期よりADL動作を中心に介入した事例について報告する。
【方法】
事例は50代女性、診断名は左大腿骨頸部骨折、既往歴は特になし。現病歴では、駐車場で滑って転倒し、翌日に人工骨頭全置換術を施行した。術後よりOTを開始し約2週間でADLは自立となったものの、退院目前で脱臼してしまった。脱臼後にカナダ作業遂行測定（COPM）を使用し床上動作を中心に介入し、床上動作を含めたADL動作が獲得となり退院となった。尚、倫理的配慮として、対象者とその家族に対し、本研究の趣旨を説明し、報告の同意を得た。
【結果】
脱臼前のADLはFIM118/126点、歩行は独歩が可能であった。脱臼後にCOPMを実施し、①『トイレに1人で行けるようになる』では遂行度5→8満足度7→9、②『風呂に1人で入れるようになる』では遂行度3→5満足度5→5、③『布団で寝れるようになる』では遂行度1→1満足度1→8という結果となった。
【考察】
本事例は脱臼前にADLが自立となり退院も近づいていたが、退院前に脱臼を呈してしまった。OTでは、脱臼後にCOPMを行い、早期より本人の希望する動作を中心に行ったことで、床上動作を含めたADL動作を獲得することが可能となり、脱臼後約1週間で退院できたと考えられる。このように、年齢や認知機能を考慮する必要もあるが、大腿骨近位部骨折の術後や脱臼後よりCOPMを行い、優先度の高い項目に介入することで、早期に在宅復帰できることが示唆された。　692/700
key wards；
COPM，床上動作，大腿骨近位部骨折

第32回愛知県作業療法学会、愛知県、2024年5月19日

COVID-19罹患後ARDSとなり，人工呼吸管理となった事例に対するアプローチ

小幡勇斗[1]、玉木聡[1]

1）総合上飯田第一病院　リハビリテーション科

【序論・目的】
急性呼吸促迫症候群（ARDS）とは何らかの侵襲により急激に発症する血管透過性亢進型の肺水腫であり，高度の低酸素血症をきたす病態である．ARDS治療管理ガイドラインでは16時間以上の腹臥位療法が有効とされている．今回，我々はCOVID-19罹患後ARDSを呈した事例に対して腹臥位療法を行い，早期に人工呼吸器離脱が可能となり，せん妄を認めたもののADLの改善が得られた事例を経験したため報告する．
【方法】
80歳代，女性，既往歴なし．腰痛のため体動困難となり救急搬送された．入院時のPCR検査でCOVID-19陽性を確認．2週間程度で経過良好となり退院となったが，約1か月後に下肢の浮腫と呼吸苦が出現し再度入院となった．ARDSと診断され，翌日より作業療法（OT）開始となった．病前は夫と2人で生活しADLは自立，家事は夫と協力しながら行っていた．今回，筋力はICU-AWの診断基準で評価されるMRC，ADLはBI，認知機能はHDS-R，せん妄についてはICUで使用されることの多いCAM-ICUを採用した．尚，倫理的配慮として，対象者の家族に対して本研究の趣旨を説明し，報告の同意を得た．
【結果】
発症2日後に気管挿管となり人工呼吸管理となった．開始時会話は困難，基本動作は全介助であった．午前9時に医師や看護師同席の下でOTが腹臥位へ体位変換を行い，夜勤帯までに腹臥位を終了した．気管挿管7日後に人工呼吸器離脱され，MRCは56点，基本動作は見守りであった．見当識は保たれていたが，抜管翌日夜間より辻褄の合わない発言多くなり，CAM-ICUにてせん妄有と判断した．HDS-Rは13点，BIは15点であった．OTはADL訓練を中心に行い，看護師へできるADLは病棟でも行うよう共有した．発症5週後，MRCは58点と筋力改善を認め，基本動作は修正自立であった．CAM-ICUにてせん妄無しと判断，HDS-Rは13点であった．食事や整容は自立，ポータブルトイレにて排泄自立と改善を認めBIは75点であった．歩行の不安定さや階段昇降に見守りが必要となり事例と家族から「自宅退院は困難」との判断が示され施設退院となった．
【考察】
今回，短時間でも腹臥位療法を行ったことで人工呼吸器の早期離脱ができたと考える．気管挿管に伴うせん妄は早期よりOTが介入し，ADL訓練を中心に行ったことでせん妄やADLが改善されたと考える．現在，COVID-19は第5類感染症へと移行しているが高齢者等は重症化しやく気管挿管が必要となる場合も多い．気管挿管に至っても早期にOTが介入しADLの視点を持ちアプローチすることでADLの改善が示唆された．

第23回東海北陸作業療法学会　石川県　2024/9/14-9/15

Balloon Kyphoplastyを施行した脊椎圧迫骨折患者における術前BMI及び筋量減少との早期隣接椎体骨折との関係性の検討

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右高沙妃[1]，宮尾彩乃[1]，安田尚太郎[1]，田中亜悠[1]，村上慈葉[1]，立松典篤[2]

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【目的】
脊椎圧迫骨折患者において、術前のBody Mass Index(BMI)及び筋量減少とBalloon Kyphoplasty(BKP)後の早期隣接椎体骨折との関係を明らかにすること。
【方法】
2022年1月から2023年3月までにBKPを施行された脊椎圧迫骨折患者74例を対象とした。除外基準は、欠損値、腸腰筋面積計測困難とした。アウトカムはBKP後3ヶ月以内の隣接椎体骨折（早期隣接椎体骨折）とし、術前BMIは18.5未満、18.5以上25.0未満、25.0以上に分類した。術前筋量は第3腰椎レベルCT画像から腸腰筋面積を算出し，身長の二乗で除した腸腰筋指数を用いた。先行研究を基に、腸腰筋指数が6.36㎠/㎡未満(男性)、3.92㎠/㎡未満(女性)を筋量減少とした。統計解析では、Log-rank検定にて術前BMIカテゴリー及び術前筋量減少の有無における早期隣接椎体骨折の累積発生率を比較した。さらに、従属変数を早期隣接椎体骨折の有無、独立変数を術前BMIカテゴリーまたは術前筋量減少の有無としたCox比例ハザード回帰分析を実施し、患者特性を1変数ずつ調整したモデルを作成した。有意水準はP<0.05とした。
【結果】
71例が解析対象となり，早期隣接椎体骨折患者は17例(23.9%)であった。Log-rank検定では、術前BMIカテゴリー間における早期隣接椎体骨折の累積発生率に有意差を認めた(P=0.034)が、術前筋量減少の有無では有意差を認めなかった(P=0.214)。Cox比例ハザード回帰分析では、患者特性変数で調整後も術前BMI18.5未満が有意な変数として抽出されたが、術前筋量減少の有無は抽出されなかった。
【考察】
BMI18.5未満はサルコペニアの有病率が高く、サルコペニアは術後合併症のリスク因子として報告されている。本研究ではBMI18.5未満は早期隣接椎体骨折の発症率と関連したが筋量減少の有無は関連しなかったことから、筋量よりも他の体組成もしくは筋力や身体機能といった要因が早期隣接椎体骨折に関連する可能性が考えられる。
【結論】
脊椎圧迫骨折患者において、術前BMI18.5未満はBKP後の早期隣接椎体骨折のリスク因子である可能性が示唆された。
【倫理的配慮】
本研究は総合上飯田第一病院の倫理委員会の承認を得た（承認番号:202303）。

第32回愛知県理学療法学術大会　愛知県　5月19日

倫理コンサルテーションチーム（ECT）と緩和ケアチーム（PCT）の協同～「本人にとって最善」の医療の実現を目指すために

岡島明子[1)2)3)]　佐藤真嗣[2)3)]　福田有梨[2)3)]　清水智子[2)3)]

1）総合上飯田第一病院　緩和ケア外科
2）総合上飯田第一病院　緩和ケアチーム
3）総合上飯田第一病院　倫理コンサルテーションチーム

【はじめに】
当院は急性期総合病院で緩和ケア病棟は持たないが、2011年に演者が緩和ケアチーム（ＰＣＴ）代表となり、2020年から「緩和ケア外科」を標榜して、入院・外来ともに対応している。人生の最終段階の医療において倫理的なテーマに関わることも多く、同年倫理委員長に任命され、2022年には倫理コンサルテーションチーム（ＥＣＴ）を立ち上げて活動を開始した。
ECTは倫理委員会の下部組織という位置づけで、演者がリーダー、PCT専任認定看護師がサブリーダーとなり、他に医師3名と管理栄養士・MSW・公認心理師・OTなどで構成した。職員から相談を受け、必要に応

じて関係する職種でのカンファレンスを開催して問題解決にあたる。
　今回、ECTとPCTが連携し、「本人にとって最善の方針」への決定プロセスを支援した取り組みを紹介する。
【事例】
①看取り期に家族のDNAR合意が得られない：
　PCT介入により家族に十分な情報提供およびメンタルケアを行うことで受容が得られ合意に達した。
②癌疑いに対する精査拒否：
　意向確認し在宅医療に移行。後日緩和ケア外科に入院し看取り。
③認知症・家族からの透析拒否：
　主治医とともに家族面談し、本人の意向であったことを確認、合意形成。
④認知症・身寄りなし・癌疑いに対する治療方針決定困難：
　PCT介入し意思決定支援行い、精査の結果手術施行。
⑤保存的治療抵抗性のイレウスに対する手術拒否：
　意思再確認し緩和ケア外科転科して看取り。
⑥胃瘻造設方針への疑義：
　意向再確認し造設見合わせ、緩和ケア外科転科し退院支援。
【考察】
　当初は緩和ケアの対象と判断できない事例も「倫理コンサルテーション」として打診されて介入した結果、適切なＡＣＰを経て最善と思われる方針を導くことができた。倫理委員会とは別に機動性に優れる２つのチームが連携することで、門戸も広がり、効果的な活動になっていると思われた。

第29回日本緩和医療学会学術大会　神戸　2024.6.14～6.15

糖尿病患者における意図的黄斑円孔からの中心窩下硬性白斑除去後の長期成績

神谷由紀恵[1)]、熊谷和之[1)]、神谷茉紗代[1)]、深見麻里絵[1)2)]、水谷凜一郎[1)]、大岩雅和[1)]、古川真理子[1)]

1）上飯田第一病院眼科
2）深見眼科

【目的】
　糖尿病患者における意図的黄斑円孔からの中心窩下硬性白斑除去後の長期成績を報告する。
【対象と方法】
　中心窩下硬性白斑除去を行った7人9眼を遡及的に検討した。本研究は前報告(Graefes Arch Clin Exp Ophthalmol. 2020;258:1893-1899)の6人7眼を含む。硝子体手術は25Gシステムで行った。有水晶体眼は白内障同時手術を行い、後部硝子体剥離作成、内境界膜剥離後、38ゲージの針を用いて網膜下に眼灌流液を注入し、内境界膜剥離作成時の意図的黄斑円孔から硬性白斑を水流で除去し、空気あるいは六フッ化硫黄ガスによるタンポナーデを行った。主な検討項目は視力、中心窩下白斑の状態、併発症である。小数視力はlogMARに変換し、0.2以上の変化を改善とした。
【結果】
　患者はすべて女性で、平均年齢は70.4±6.2（59-76）歳だった。全例に汎網膜光凝固の既往があり、1眼は抗血管内皮増殖因子薬の注射歴、２眼に硝子体手術歴があった。水晶体の状態は有水晶体4眼、偽水晶体5眼だった。術後平均観察期間は51±17（11-68）か月だった。黄斑部の硬性白斑は全例で術後早期に減少した。相乗平均視力は術前0.11、術後最高0.47、最終0.34で、術後最高視力および術後最終視力は術前と比べ有意に改善した(いずれもp＜0.001)。最終視力は改善8眼(89%)、不変1眼(11%)、悪化0眼(0%)だった。経過観察中に重篤な合併症や黄斑浮腫の再発はなかった。
【結論】
意図的黄斑円孔からの中心窩下硬性白斑除去後の長期成績は良好と考えられる。

第78回日本臨床眼科学会　京都　2024年11月14日～17日

Association of retinal ischemia with intraretinal layer edema in branch retinal vein occlusion

Purpose:
Branch retinal vein occlusion (BRVO) is a retinal vascular disorder, and macular edema (ME) associated with BRVO is a complication that contributes to vision loss. Injection of anti-vascular endothelial growth factor (anti-VEGF) drugs into the vitreous is widely used to treat macular edema associated with BRVO. The purpose of this study was to investigate the association between retinal inner layer edema and retinal ischemia and its effect on visual acuity in patients with BRVO with ME.
Setting/Venue:
This study included patients with BRVO and ME who visited our clinic between January 2015 and January 2019.
Methods:
Patients had optical coherence tomography angiography (OCTA) taken over time for at least six months since the initial visit and fluorescence fundus angiography (FA) taken after six months from the onset. The presence of intraretinal edema was determined by serial observation of horizontal B scan images in an OCTA 6 x 6 mm image one month after administration of anti-VEGF. Evaluation of ischemia of the entire retina was determined by FA images after six months from the onset, and quantification of macular ischemia was evaluated by the rate of decrease in retinal vessel density in OCTA 3×3mm images six months from the onset.
Results:
This study included 22 patients (22 eyes) with a mean age of 63.3 ± 11.9 years. Intraretinal edema was observed in 17 eyes (77%). Retinal ischemia was present in 13 of 17 eyes (76%) with inner layer edema and in 1 of 5 eyes (20%) without inner layer edema, a significant difference (P = 0.039). The rate of decrease in retinal vascular density was 20.3 ± 9.3% in the group with inner segment edema and 8.20 ± 3.7% in the group without inner segment edema, a significant difference (P = 0.015). The group without internal edema had significantly better visual acuity than baseline at 6 months, 12 months, and at the last observation after treatment (P < 0.001), whereas the group without internal edema had no improvement in visual acuity during the entire period (P > 0.05). The change in visual acuity in the group with internal edema improved by more than 0.3 logMAR units during the entire period, but less than 0.3 logMAR units in the group without internal edema during the entire period. At the last observation, there was a trend toward fewer injections in the group with internal edema, although the follow-up period was longer.
Conclusions:
In BRVO with retinal inner layer ME, residual intraretinal edema one month after initial anti-VEGF treatment may be indicative of retinal ischemia and a good visual prognosis.

24th EURETINA Congress ,Barcelona/Spain 19 – 22 September 2024

入浴カンファ発足前後での入浴動作への影響について

石黒博弥[1)]

1）社会医療法人愛生会上飯田リハビリテーション病院
　リハビリテー ション科

【はじめに】
　当院では2017年より安全に患者様に入浴してもらうことを目的に、更衣・入浴動作の能力について評価をし、入浴カンファレンス（以下カンファ）を開催している。カンファには看護師、介護士、作業療法士、理学療法士が参加し、2022年からはより安全な入浴介助のため、カンファシートに更衣と清拭の評価を追加した。先行研究にて、カンファに関してアンケートを実施し、入浴動作がカンファを通じて向上したり、安全な入浴介助が行えたりしているという意見がみられた。そのため実際にどの動作が向上しているのかカンファ開催前の2016年と2022年の入浴動作に関する評価を比較した。
【方法】
　対象は当院に入院した2016年：436名、2022年：435名。評価方法は各年の入退院時の入浴動作に関するFIM（更衣、清拭、浴槽への移乗）を評価した。加えて、各年度のしているADLとできるADLの差の比較を行った。統計はWelchのt検定を行い、P値は0.05とした。
【結果】
　各年の入退院時の入浴動作に関するすべてのFIMにおいて有意差がみられた。しているADLとできるADLの差の比較では2016年の更衣、清拭、浴槽への移乗、2022年の更衣で有意差がみられた。2022年の清拭、浴槽への移乗は有意差がみられなかった。
【考察】
　カンファが開催していることで、職員間で入浴動作に関して共通認識が生まれ、浴槽の種類やリスク管理が共有されたことで安全な入浴介助が行われている。2022年より入浴カンファの用紙に「清拭」の項目が追加され、しているADLとできるADLの点数の差が減少したと考えた。今後は病棟ごとに行っていたカンファに加え、合同の会議を行い、それぞれの取り組みについて情報共有することで、全体の質の向上を目指していきたい。

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第43回回復期リハビリテーション研究大会in熊本　2024.03.08-09

回復期リハビリテーション病棟における転倒転落ADLの関係について

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【目的】
　高齢化社会が進行することに伴い,高齢者の転倒転落に関連する有害事象が社会的な関心事項のひとつとなっている。転倒により，骨折や外傷による一時的なリハ中断に至るケースも見られ,さらに転倒恐怖など心理的変化を来すことも知られている。そこで今回回復期病棟における転倒転落とFIMについて報告する。
【方法】
　2021年4月１日～ 2022年3月31日の間に入院した患者のデータベースに入力のエラー等の欠損のない352名を抽出し対象とした。転倒転落報告書から転倒回数を集計し,入院中に転倒の回数により「未経験群」,1回のみ転倒の「1回群」,複数回転倒の「複数群」の3群に分類し,基本属性やFIMデータ等を後方視的に調査した。
【結果】
　全体の集計より在院日数は転倒回数が増加するにつれ延長することが判明した。入院時FIMが低い程,転倒を繰り返す可能性が高く,転倒回数が増加すると退院時FIMも高くなりにくい傾向となった。更衣(上衣),トイレ動作,排尿管理,排便管理,ベッド移乗,トイレ移乗,車椅子,階段,問題解決の各項目のFIM利得において未経験群と複数群で差を認めた。
【考察】
　FIM利得では更衣(上衣),トイレ動作,ベッド移乗,トイレ移乗では,転倒回数が増加するほど,FIM利得が向上した。複数群は,入院時FIMが低値のためにのびしろがあり,介助量が少ない人は入院時FIMが高いため天井効果により利得に優位な差が出たのではないかと考えられる。認知項目の問題解決では,未経験群は複数群と比較し有意に利得が高くなった。これは問題解決における採点の１つであるナースコールの操作・管理が影響していると考察した。
【結論】
　今回はデータを後方視的に比較・検討することで当院の転倒の傾向やFIMとの関連性について報告した。今後は転倒発生時のADL能力の検討や発生のタイミング等の特性や要因を追加して検討していくことでより詳細なデータが蓄積できると思われる

発表
第32回愛知県理学療法学術大会　ウインク愛知　2024.5.19

重度右片麻痺を呈し右上下肢管理に難渋した症例

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【はじめに】
　今回、左脳梗塞により重度右片麻痺、注意機能と記憶機能低下 (以下学習力低下) を呈し右上下肢管理に難渋した症例を経験したため報告する。
【症例紹介】
　80歳代右利き女性。X/Y/Zに上記診断を受け、Y/Z+25に当院転院。転院時、重度右片麻痺、全身の筋力と耐久性低下が著明。学習力低下あり。
【倫理的配慮】
　個人情報保護に留意し個人を特定できない形とした。学会発表に際して本人に同意を得た。
【介入経過】
　初期評価でBRS右上肢Ⅰ手指Ⅰ下肢Ⅲ、感覚は軽度鈍麻、全身筋力と耐久性低下が著明であった。学習力低下を認め右上下肢管理が困難であったため、基本動作軽介助、ADL軽介助～中等度介助であった。
問題点として重度右片麻痺、全身筋力と耐久性、学習力、右半身の認識低下、右上下肢管理困難を挙げる。ADL見守りを目指し、上肢機能練習、ミラーセラピー、基本動作練習、ADL練習を実施、スリングを貸出し、ポジショニングと自主トレ指導を行った。また、右上下肢管理獲得のため動作練習では本人と繰り返し手順確認と反復練習をし、PTと手順の統一を行った。
　最終評価時BRS 右上肢Ⅱ手指Ⅱ下肢Ⅳ、学習力低下は残存し右上下肢管理の定着には至らなかったため、基本動作見守り、ADL見守り～軽介助であった。
【考察】
　右上下肢管理が定着しなかったのは学習力低下の要因が強いと考える。反面、見守りで行えるようになったのは、繰り返し手順確認、手順の統一により学習が補われたこととミラーセラピーによる右半身の認識の向上、運動機能の改善を図る事ができたと考える。
　今後、この経験を活かしそれぞれにあった右上下肢管理の定着方法を考えていきたい。

発表
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愛知県産業労働センター　2024.5.19

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3）中島ら：振動刺激およびミラーセラピーの併用療法により身体パラフレニアの改善を認めた一例：2019

地域在住高齢者の１年間における体重変化の特徴

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【はじめに、目的】
　高齢者の健康問題として、フレイル、ロコモティブシンドローム、サルコペニアが注目されており、共通する要因として体重減少がある。特に、日本においては高齢者の低体重・低栄養が問題となっており、取り組むべき喫緊の課題とされている。しかしながら、高齢者の体重変化に着目した報告は乏しい。そこで、本研究では地域在住高齢者の1年間における体重変化の特徴を探索することを目的とした。
【方法】
　令和4・5年度のA町健診事業に参加した65歳以上の地域在住高齢者206名（平均年齢75.3±5.9歳）を対象とした。主要評価項目を1年間の体重変化とし、3%の変化を基準に減少群・維持群・増加群の割合を調査した。また、ベースライン時のBody Mass Index (BMI)、Skeletal Muscle Mass Index (SMI)、握力、歩行速度、5回立ち上がりテスト、Mini Nutritional Assessment-Short Form (MNA SF)について群間比較を行い、特徴を探索した。
【結果】
　１年間の体重変化の結果、減少群・維持群・増加群は17.5%・74.3%・8.3%であった。また、維持群と比較して減少群、増加群ともに5回立ち上がりテストが有意に低値を示した。
【考察】
　地域在住高齢者の1年間における体重変化は74%が維持され、18%が減少していた。本研究の対象者は比較的健康意識の高い集団であると考えられるが、それでも1年間で約2割が3%以上の体重減少を呈していることが明らかとなった。また、減少群と増加群においては下肢筋力の低下が進行し始めており、身体活動量や活動範囲などの生活習慣に影響を及ぼしたことで体重変化が起きた可能性が考えられた。
【結論】
　地域在住高齢者において、1年間で約2割が体重減少することが明らかとなり、体重減少群と体重増加群では下肢筋力が低下している可能性が示唆された。
【倫理的配慮】
　本研究は名古屋大学医学部倫理審査委員会保健学臨床・疫学研究審査委員会の承認を受けて実施し、対象者には紙面を用いて説明し同意を得た。

第10回日本栄養・嚥下理学療法学会学術大会　福岡　2024.07.06-07.07

回復期リハビリテーション病院における自動車運転支援に対する意識調査 —PT・OT・STの比較検討—

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【はじめに】
　脳卒中患者の自動車運転再開支援にあたっては、運転免許の適正試験合

格基準、高次脳機能評価の項目およびその判定基準、ドライブシミュレーター（以下DS）の評価結果、代償手段の提案などさまざまな知識が必要である。加えて、運転再開希望者を望まれた際、心身機能に対して多職種による連携した支援が重要である。PT、OT、ST間での運転支援に関する知識を調査し，職種間に違いがあるのかを検討したので報告する。

【方法】

対象は当院に在籍するPT32名、OT27名、ST11名とし、無記名式アンケートを実施した。本発表に際し、書面にて同意を得た。リッカート法を用いて、次の12項目を「1.知らない～5.かなり知っている」の5点法で回答してもらった。内容は、1.評価の実施、2.身体機能の制限、3.多職種の連携の流れ、4.患者への説明、5.家族への説明、6.実車評価、7.DS評価、8.普通免許の適性試験合格基準、9.運転再開の流れ、10.就労・職場復帰に運転が必要な場合の対応、11.代替手段の提案・対応、12.運転に関するリハビリテーションとした。統計学的手法は、Kruskal-Wallis検定を実施し、多重比較として、Bonferroni法を実施した。有意水準は、p<0.05とした。統計ソフトはEZR ver.1.61を用いた。

【結果】

全12項目の平均値はPT1.72、OT2.51、ST2.11で有意差がみられた（p<0.001）。項目別の平均値を職種間で比較すると、PTとOTでは、1、2、3、4、5、6、8、9、10、12の項目でOTが有意に高かった。PTとSTでは、1、6、10の項目でSTが有意に高かった。STとOTでは、2の項目のみOTが有意に高かった。

【考察】

今回、項目によって職種間で知識に有意差があることがわかった。永島(2019)は、法改正が進み医師の診断書等にOTの評価が求められることが増えていると報告している。藤田(2020)は、OTはさまざまな検査を用いて対象者の評価を行えることや、運転に関する作業分析を行ったうえでの助言が出来ることなどが、一定の成果を上げている理由だと報告している。PT・OT・ST協会の自動車運転支援に関する取り組みは増加傾向にある中で、当院では自動車運転支援への関わりはOTが主となることが多く、職種間の専門性や業務の差によって知識に差が生じたと考えられた。今後の取り組みとして、自動車運転に関する知識を統一していく目的で多職種での勉強会が必要と考えられる。

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2024.9.14 ～ 2024.9.15

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「自動車運転支援に対する知識や困難さについての意識調査　―理学療法士・作業療法士・言語聴覚士の比較検討―」

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【はじめに】

脳卒中患者の自動車運転支援には，運転免許の適正試験合格基準，高次脳機能検査，ドライブシミュレーター（以下DS）など，様々な知識が必要であり，対象者の身体・認知機能に応じた多職種連携が求められる。当院の療法士を対象に運転支援に関する意識調査を行い，職種間の違いについて検討したので報告する。

【方法】

対象は当院に在籍する理学療法士(PT)32名，作業療法士(OT)27名，言語聴覚士(ST)11名とし，無記名式アンケートを実施した。本発表に際し，書面にて同意を得た。次の12項目について，知識の程度：「1.知らない～5.かなり知っている」，困難さの程度：「1.困らない～5.かなり困っている」を5件法で回答してもらった。1.評価の実施，2.身体機能の制限，3.多職種の連携の流れ，4.患者への説明，5.家族への説明，6.実車評価，7.DS評価，8.普通免許の適性試験合格基準，9.運転再開の流れ，10.就労・職場復帰に運転が必要な場合の対応，11.代替手段の提案・対応，12.運転に関するリハビリテーション。各項目の結果は職種ごとに集計し，Kruskal-Wallis検定にて比較した。また，多重比較にはBonferroni法を用いた。有意水準はp＜0.05とした。

【結果】

全12項目の平均値について，知識の程度はPT:1.74，OT:2.51，ST:2.11であり，PTとOT間で差を認めた（p=0.000）。困難さの程度は，PT:2.29，OT:2.75，ST:1.95であり，職種間で有意差はなかったが，PT，STよりOTが高い傾向であった（PT-OT p=0.051；OT-ST p=0.057）。

【考察】

今回，職種間で自動車運転支援に関する知識の程度が異なることが明らかとなった。藤田(2020)は，OTはさまざまな検査を用いて対象者の評価を行えることや，運転に関する作業分析を行ったうえでの助言が出来ることを報告している。当院においても，運転再開の支援としてOTが担う役割が大きい状況があり，得られた結果は，職種間の専門性の違いを反映したものであると解釈した。

発表

第48回高次脳機能障害学会学術集会
東京たま未来メッセ（東京）　2024.11.8 ～ 2024.11.9

体重,血糖コントロール不良の糖尿病性腎症,血液透析患者に対し腎臓リハ,GLP-1受容体作動薬を投与している1例

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【緒言】

糖尿病性腎症は我が国において透析導入原疾患の第一位(39.5%)であるが,透析患者についても良好な血糖コントロールの維持が求められる.しかし血糖降下薬は限られ又適正体重の維持が困難な例もある.近年(2022.05)発売されたセマグルチド(GLP-1受容体作動薬)は,血糖値を下げるインスリンの分泌を増加,血糖値を上昇させるグルカゴンの抑制,胃での消化を遅らせ食欲を減退させることで食事量を減らす作用をもつ.また,インスリンを分泌する膵臓のβ細胞の成長を促進すると考えられている.これらの作用によって体脂肪を減少させる.今回,血糖,体重コントロール不良でセマグルチドに加え腎リハを施行した症例を経験した.その経過を報告する.

【治療と観察】

2023年10月よりセマグルチドを0.25mgで投与を開始し,同時期に透析中リハビリテーションの介入を行う.リハビリテーションの内容としては,レジスタンス運動として両下肢へ2.5kgの重錘を装着して行い,有酸素運動としてエルゴメーターを50W15分間から始めた.
投与開始から4週間後にはセマグルチドを0.5mgへ増量し,グリコアルブミン値及び体重増加率の推移を観察した.また体組成計にて骨格筋量,体脂肪率のデータ推移を観察するとともに理学療法士による体力測定も行った.

【考察・結語】

本症例におけるセマグルチドの投与により,血糖コントロールが安定し,体重増加率は低下した.また,腎臓リハビリを併用することにより,骨格筋量が増加し,体脂肪率は低下した.
このことから,血糖コントロールをしながら,腎臓リハビリテーションを同時に行うことは有用だったと考えられる.また,体力測定評価の下肢筋力は変化がないことから,セマグルチドの投与以外に要因あると考えられる.

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第14回　日本腎臓リハビリテーション学会学術集会
朱鷺メッセ　新潟コンベンションセンター（開催地）2024.3.16 17

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学生の看護技術習得に向けての主体的な取り組み —技術マイスターの実践報告—

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【目的】
マイスターの取り組みについて、学生に対する効果と今後の課題について検討する。

【用語の定義】
技術マイスターとは、技術項目の卒業時の到達度の到達レベルⅠのうち6項目から、マイスター認定試験(母体でもある実習病院の新人看護師技術評価表を一部改変)に合格した者に与えられるA校独自の称号である。

【方法】
対象：2022年度のA校在学生100名、マイスターを取得したA校卒業生4名。方法：在学生には無記名の自記式質問紙で、マイスター認定試験の受験有無と理由を回答選択肢、マイスター取得者が感じたことについて自由記載を求めた。回答選択肢は単純集計、自由回答についてはユーザーローカルテキストマイニングツール(https://textmining.userlocal.jp/)を使用し、出現頻度とスコアが高い用語を明らかにした。上記の卒業生4名には、半構造化インタビューにて、臨地実習や卒業後に役立ったか質問した。

【倫理的配慮】
対象者と所属する病院及び所属施設に、調査の主旨、個人情報保護について説明・同意を得た。

【結果】
2022年度の在校生100名中30名(31.5%)がマイスターを受験し、うち25名(83.3%)が1項目以上のマイスターを取得した。また合否に関わらず受験者の28名(93.3%)が、技術の向上、実習で役立つ、反復練習で自信がついたと答えた。テキストマイニングの基本情報は、総文章数21、平均文章長(文字数)19.8、延べ単語数438、単語種別数は91、名詞60、動詞29、形容詞2であった。「練習」の出現頻度が11と高く、「できる」「実習」の用語が次いで多かった。スコアが高いのは「実習」「取り組める」であった。受験しない学生のその理由は、「日程調整の困難」が多かった。卒業生は全員「マイスター取得が実習で役立った」と述べているが、病棟スタッフの認知度が低く、マイスター取得の利点を感じられていなかった。

【考察】
学生は臨地実習に向け、「自分の知識」「自分の技術」について不安を感じ、事前に授業時間外での練習、自己学習に主体的に取り組む[2)]。この精神運動領域の能力である看護技術の習得には、「実践適用への懸念払拭に向けた技術の反復練習」が不可欠であり[3)]、マイスター取得に取り組むことも、授業時間内の演習だけでは達成できない目標に向けた学生自身の行動、主体的な取り組みと言える。このことから「実習」に向け、自らマイスターに「取り組める」、繰り返し「練習」をしたことで、これらの用語が回答に多く、スコアが高くなったと考える。そして、マイスターに取り組む過程で、学生同士の学び合い、他者からの努力に対する承認や評価を受け、技術が上達するのを感じ「できる」という自信がついたと考える。

また、マイスターを取得していた卒業生は、マイスターを取得し自信がついたことで、臨地実習において早い段階で看護技術の実践へと移行でき、自立した技術もあったことから「役立った」と回答している。練習を重ねて技術が向上し、できることが増えたことで、自信につながったと考える。就職後もマイスターを取得した技術は自信をもってできるようだが、就職先の病院スタッフにおけるマイスターに対する認知度が低く、他者からの評価や承認を得られにくく、在学中感じていたマイスターを取得した意義を見出せていないと考える。

マイスターを受験しなかった学生の「日程調整の困難」については、授業時間外に練習を繰り返す必要があるため、プライベートの時間を大切にする学生にとっては、マイスター取得に利点があると理解できていても、関心が低くなり、主体的な取り組みにつながらなかったと考える。

【結論】
1.反復練習により技術力が向上し自信が持てる。
2.臨地実習では早い段階から看護技術の実践ができる。
3.卒業生は就職先への周知不足により、卒後教育とのつながりを実感しにくい。
4.学生は練習時間の確保が困難である。

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