CASE REPORT

A Multidisciplinary Pain, Agitation, and Delirium Management Team Can Promote Rehabilitation in the Intensive Care Unit: A Case Report

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Background: Team-based approaches involving the cooperation of various professionals have the power to improve the quality of medical care by utilizing the specialized knowledge and skills of each professional. A multidisciplinary pain, agitation, and delirium (PAD) management team was established in Hiroshima University Hospital. Herein, we describe smooth patient mobilization achieved by enabling discussions among members of this multidisciplinary management team.

Case: The patient was a 72-year-old Japanese woman with acute exacerbation of interstitial pneumonia and respiratory failure. We identified a suspected alveolar hemorrhage by bronchofiberscopy on the patient’s first day in the intensive care unit (ICU). This finding required the patient to be placed on bed rest. Therefore, her physiotherapy program was restricted to mobilization. In team rounds during the patient’s 5th day in the ICU, we discussed her mobilization. Discussions among the multidisciplinary medical staff led to mobilization and a reduction in sedation medication administered because of the suspected alveolar hemorrhage. The patient underwent a second bronchofiberscopy by emergency medical doctors to assess the alveolar hemorrhage immediately after PAD rounds. The suspected alveolar hemorrhage was not confirmed. Therefore, the physiotherapy program was amended to include standing exercises and sitting in a wheelchair; the new program was initiated the same day. The patient did not experience worsening symptoms during her hospitalization and was discharged from the hospital 95 days after initial admission.

Conclusions: By discussing treatment options within a multidisciplinary medical team, we achieved smooth patient mobilization and administered reduced levels of sedation medication.

Key Words: case report; intensive care unit; pain, agitation, and delirium management team; rehabilitation

BACKGROUND

A safe and effective strategy that ensures patient comfort while maintaining a light level of sedation is associated with improved clinical outcomes for most intensive care unit (ICU) patients. However, despite these recognized advantages, integrated pain, agitation, and delirium (PAD) management has not been widely adopted. Approximately 60% of all ICUs in the United States have implemented PAD protocols. However, hospitals that have implemented PAD practices often exhibit low adherence to such protocols, which negatively effects patient outcomes. Currently, the

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effects of PAD management have not been reported in Japan. A multidisciplinary participatory PAD management team was established in Hiroshima University Hospital in June 2014. This PAD management team consists of four professionals, including a doctor, a nurse, a physiotherapist, and a pharmacist. We perform early rehabilitation for patients using ECMO and/or CHDF with a medical engineer (ME), though ME is not a member of the PAD management team in our hospital. Herein we describe the smooth mobilization of a patient achieved by enabling discussions among members of the multidisciplinary PAD management team.

**CASE REPORT**

We report the case of a 72-year-old Japanese woman who had previously smoked cigarettes (20 pack-years). Informed consent for this case report was obtained from the patient. The patient was previously diagnosed with dermatomyositis and exhibited confirmed weakness in her proximal muscles in addition to increased C-reactive protein levels. The patient visited the hospital because she suffered from dyspnea. The initial diagnosis was acute exacerbation of interstitial pneumonia, and the patient was immediately admitted to the hospital. The patient received treatment consisting of intravenous cyclophosphamide and high-dose intravenous immunoglobulin therapy. She displayed decreased blood oxygenation 10 days after admission. An examination using computed tomography identified the presence of ground-glass opacity in the right lung field (Fig. 1). The patient was subsequently transferred to the ICU and underwent intubation. The clinical treatment course in the ICU is shown in Figure 2. The patient commenced physiotherapy 3 days after being transferred to the ICU. During the first rehabilitation evaluation, the patient’s general status was lucid (Glasgow coma scale, E:4, V:T, M:6). Her limb muscle strength was approximately 3–4 according to a manual muscle test. We identified a suspected alveolar hemorrhage by bronchofiberscopy on the patient’s first day in the ICU. This finding required the patient to be placed on bed rest and she was administered the sedative drug propofol. The patient was maintained at a sedation level of −3 to −1 according to the Richmond Agitation-Sedation Scale (RASS). Therefore, the physiotherapy program was restricted to a limited set of range-of-motion and mild muscle strength exercises. We discussed mobilizing this patient in PAD rounds during her 5th day in the ICU. Because of the suspected alveolar hemorrhage, discussions with the multidisciplinary medical staff led to the instigation of mobilization and a reduction in sedation medication. The patient underwent a second bronchofiberscopy by emergency medical doctors to assess the alveolar hemorrhage immediately after PAD rounds. The suspected alveolar hemorrhage was not confirmed. Therefore, the physiotherapy program was amended to include standing exercises and sitting in a wheelchair. The new program was initiated on the same day as the second bronchofiberscopy, and the target RASS score was set to 0. The patient performed locomotion exercise using a walker while connected to the ventilator on the 6th day in the ICU. On day 7 after ICU admission, the patient was successfully extubated. She remained in the ICU for 15 days in total. The patient was then transferred to the general

![Fig. 1](image_url). Computed tomography scan (A) and chest X-ray (B). Computed tomography indicated the presence of ground-glass opacity in the right lung field. Images were obtained during the patient’s first day in the ICU.
hospital ward because her overall condition had improved. She did not experience worsening symptoms during hospitalization and was discharged from the hospital 95 days after her initial admission.

**DISCUSSION**

Herein we describe the smooth mobilization of a patient following PAD management team discussions with the medical staff. The early mobilization and decreased sedative drug use did not exacerbate the patient’s symptoms in the ICU. In 2013, the American College of Critical Care Medicine emphasized the reduction of deep sedation and highlighted the importance of early mobilization in PAD management guidelines. Early mobilization by a physiotherapist is safe and well tolerated. Additionally, early mobilization has previously resulted in superior functional outcomes at hospital discharge, a shorter duration of delirium, and more ventilator-free days compared to standard care. Schaller et al. reported that the early mobilization and rehabilitation of critically ill patients improves functional independence at hospital discharge and leads to improved discharge disposition. 

Fig. 2. Summary of treatment and patient parameters while in the ICU. During the patient’s time in the ICU, the ratio of the arterial oxygen partial pressure and the fraction of inspired oxygen (P/F ratio) did not decline. In addition, no emergence of agitation or delirium associated with the decreased dosage of the sedation drug was observed.
mobilization is possible if a physiotherapist contributes to the PAD management team. The present patient performed both standing exercises and sitting in a wheelchair during mobilization. In the future, it will be necessary to introduce PAD management teams and early rehabilitation into medical practice in Japan.

Smooth patient mobilization requires efficient communication among the interdisciplinary medical staff. Before the PAD management team was set up, communication was one-way and consisted of an “indication” to the other medical staff from the medical doctor. Therefore, in many cases, mobilization occurred on the day after the medical doctor issued this indication. The multidisciplinary medical team was able to contribute to the PAD management team. As a result, the PAD management team facilitated bidirectional communication with the multidisciplinary team. This type of communication is recommended in the PAD guidelines and plays an important role in improving patient outcomes.

CONCLUSION

We performed smooth patient mobilization by enabling discussions between the multidisciplinary professional medical staff and the PAD management team. Therefore, PAD management teams can promote rehabilitation and improve the clinical outcomes of ICU patients.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

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