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PATIENT SAFETY NETWORK

Walking Patient, Missing Drain

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The Case

A 43-year-old woman with a history of metastatic breast cancer was admitted to the hospital for an elective lumbar drain placement to treat hydrocephalus and elevated intracranial pressures. Because of the pressure on her brain, the patient had symptoms including mood changes, headaches, and appetite changes. Following the procedure, she was admitted to the intensive care unit (ICU) for monitoring under the care of the ICU team and neurosurgery team. She made progress with recovery as expected and participated in physical therapy. On day 5 of her hospitalization, the physical therapist administered vigorous therapy (as prescribed) with the patient out of bed. The therapist returned the patient to bed at the end of the therapy session. While resting in bed after the session, the patient complained of headaches, decreased appetite, and worsening visual problems. Since the complaints were similar to the patient's symptoms on admission, which should have been addressed by the lumbar drain, the nurse attributed the patient's complaints to depression and took no action, allowing the patient to sleep and keeping unchanged the prescribed frequency of neuro checks every 6 hours while awake.

Early in the morning, the patient was found to be barely arousable. The nurse and the team then discovered that lumbar drain had dislodged and was now on the floor. A stat CT scan was ordered, which revealed extensive hydrocephalus. An external ventricular drain was placed emergently at the bedside after securing the patient's airway. Eventually the patient had a new lumbar drain placement, with improvement of her mental status and other complaints. She was ultimately extubated and discharged to home.

The Commentary

Commentary by Brian F. Olkowski, DPT; Mary Ravenel, MSN; and Michael F. Stiefel, MD, PhD

Survivors of critical illness are often afflicted with cognitive, neuromuscular, psychological, and functional deterioration.(1-3) Immobility has been identified as one of the leading causes of complications associated with intensive care unit (ICU) admission.(4) Fortunately, early mobility programs in the ICU have been

shown to improve strength, physical function, and quality of life while reducing length of stay, cost, delirium, sedation, and the duration of mechanical ventilation.(5-7) Once physiologic and hemodynamic stability has been established, early mobilization can be achieved with an interdisciplinary approach to increasing patient participation in upright activity and walking while in the ICU. Although rare, adverse events during early mobilization have included falls, line dislodgement, ventilator asynchrony, and exercise intolerance.(5-7)

The management of patients with acute neurologic disorders frequently includes the placement of an external ventricular drain (EVD) or lumbar drain for intracranial pressure management. Although most clinical practice guidelines focus on the prevention of infection, malposition, and hemorrhage (8,9), the American Association of Neuroscience Nurses (AANN) has developed guidelines for the interdisciplinary care of patients after EVD or lumbar drain placement.(10) The AANN guidelines recommend an hourly assessment of neurologic function in the ICU and inspection of the drain insertion site every 1–2 hours to identify changes that may be related to the integrity of the lumbar drain.(10) Many institutions have developed protocols requiring an hourly assessment of neurologic function in the ICU and routine inspection of the lumbar drain insertion site, especially after physical therapy and mobilization. In this case, a neurologic assessment was performed every 6 hours only while the patient was awake, and it is unknown if the drain insertion site was routinely inspected. Implementing best practices such as those recommended by the AANN may reduce adverse events associated with lumbar drain insertion and mobilization of patients with a lumbar drain.

Interdisciplinary collaboration is essential to the success of early mobilization programs in the ICU.(5-7) Effective handoff communication between members of the interdisciplinary team, specifically the nurse and physical therapist in this case, before and immediately after physical therapy may prevent adverse events associated with early mobilization.(11-13) In many institutions, interdisciplinary rounds and safety huddles have provided venues where team members can determine a patient's eligibility to participate in early mobilization and review precautions that are critical to maintaining the safety of a patient with an EVD or lumbar drain. Prior to physical therapy or mobilization, the nurse and physical therapist should review mobility precautions, confirm that the patient meets early mobility criteria, and ensure that the EVD or lumbar drain is clamped to prevent rapid cerebrospinal fluid (CSF) drainage. Generally, patients tolerating intermittent CSF drainage may be eligible for mobilization, while patients requiring continuous CSF drainage may not be appropriate for mobilization. After physical therapy treatment or mobilization, the nurse and physical therapist should discuss the patient's response to mobilization and inspect the EVD or lumbar drain insertion site to ensure patency. In addition, the nurse will need to calibrate or "level" the EVD or lumbar drain once mobilization is completed to prevent CSF overdrainage and ensure that the prescribed intracranial pressure is maintained.(10)

Health care providers are frequently required to make clinical decisions based upon a change in a patient's symptoms or presentation. A cognitive bias known as anchoring can result in the failure of a health care provider to adjust treatment as new, disconfirming information becomes available.(14) In this case, the patient's initial symptoms (mood change, poor appetite, and headache) resolved after insertion of a lumbar drain but returned after her physical therapy treatment. Unfortunately, the recurrence of the patient's symptoms was attributed to depression because the lumbar drain was still believed to be functioning correctly. Health care providers may benefit from cognitive awareness training—which may include training

in the use of diagnostic checklists or the technique of reflective reasoning—to improve their clinical decision-making and mitigate the risks of anchoring and other cognitive biases.(15) Medical errors due to cognitive biases may also be reduced by increasing the frequency of interdisciplinary communication. Colleagues not directly involved in the care of a patient may catch some cognitive errors that the directly involved clinician might otherwise miss.(15)

Take-Home Points

- Early mobility programs have been shown to reduce adverse events associated with critical illness. Criteria for participation in early mobilization in the intensive care unit should be established to ensure safety and reduce adverse events.
- Clinical practice guidelines have been developed to improve management of patients with an external ventricular drain or lumbar drain. These guidelines call for frequent monitoring of neurologic function and inspection of the drainage system, particularly in the setting of early patient mobilization.
- Ineffective communication is common in health care and places patients at risk. Effective interdisciplinary communication may reduce adverse events resulting from the mobilization of patients with an external ventricular drain or lumbar drain in the intensive care unit.
- Cognitive biases such as anchoring can result in medical errors. Health care providers may benefit from cognitive awareness training and increased interdisciplinary communication to reduce medical errors that may result from cognitive biases.

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