

## The Challenge of Recognizing Pain in Critically ill Patients: An Illustrative Case Report and Mini-Review

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### Abstract

A 25-year-old man was admitted to the intensive therapy unit (ITU) following surgery for multiple injuries sustained in a severe road traffic accident. Oesophageal and tracheal injuries had been repaired. Multiple lacerations, all over his body, had been cleaned and dressed under anaesthesia. A forearm fracture was managed with a plaster of paris back slab. The rib fractures and fractured fibula were managed conservatively. The patient was brought to the ITU from the operating room with an oral endotracheal tube in situ and mechanically ventilated.

The recognition of pain in ICU patients is extremely difficult. Assessment is hampered by reduced consciousness secondary to their illness or a requirement for sedation. Studies have consistently demonstrated that pain in ICU patients is under-recognised and undertreated. Changing sedation practice may improve patient morbidity by reducing the depth of sedation, or by prioritising analgesia over sedation.

**Keywords:** Pain; Intensive therapy unit; Analgesia; Sedation.

### CASE PRESENTATION

A 25-year-old man was admitted to the intensive therapy unit (ITU) following surgery for multiple injuries sustained in a road traffic accident. He had sustained rupture of the upper oesophagus, partial transection of the extrathoracic trachea, and fractures of ribs 3-7, the radius, ulna and fibula on the right. The oesophageal and tracheal injuries had been repaired. The multiple lacerations, all over his body, had been cleaned and dressed under anaesthesia. His forearm fracture was managed with a plaster of paris backslab. The rib fractures and fractured fibula were managed conservatively. The patient was brought to the ITU from the operating room with an oral endotracheal tube *in situ* and mechanically ventilated.

Since arrival on the intensive care unit he had been sedated with infusions of propofol and fentanyl. However, several boluses of propofol had been administered and the rate of the propofol infusion had been increased 'as he had been agitated' and

'intolerant of the endotracheal tube'. Whilst the rate of the propofol infusion had been increased to 300 mg/h the rate of the fentanyl infusion had been left at 100 mcg/h. With this regimen of sedation and analgesia the patient appeared comfortable (RAS -1) but an infusion of noradrenaline (0.2 mcg/kg/min) was required to maintain mean arterial pressure above 60 mmHg.

Later, on turning him from his left side onto his right for routine relief of pressure areas no additional sedation or analgesia was administered. He grimaced and became tachycardic (heart rate 130 beats per minute), hypertensive (190/110 mmHg), tachypnoeic (respiratory rate 35) and diaphoretic.

It was only then suspected that this reaction was caused by severe pain. Boluses of fentanyl (20-40 mcg) were immediately administered to treat this. A total of 200 mcg was administered to settle the patient to a Richmond Agitation Scale Score (RAS) of -1. The rate of the fentanyl infusion was increased to 350 mcg/h

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and the propofol infusion was weaned to 150 mg/h. The noradrenaline infusion was then weaned to 0.05 mcg/kg/min. The patient's heart rate, hypertension and agitation settled. Boluses of fentanyl and propofol were given prior to any subsequent nursing procedures. These significantly reduced (but did not eliminate) the agitation and sympathetic response to these procedures.

### DISCUSSION

Pain is an unpleasant sensory or emotional experience associated with actual or potential tissue damage. The recognition of pain in sedated, intubated and mechanically ventilated critically ill patients is difficult. Patients in ICU may have either a reduced level of consciousness as a complication of their diagnosis, or require sedation to facilitate treatment (i.e., to permit intubation and ventilation).

Opioids and propofol are usually both administered to improve patient comfort but are not interchangeable. Opioids which provide analgesia for pain are also sedating. However although propofol is a sedative that can treat anxiety and agitation it does not provide analgesia. Pain is 'whatever the experiencing person says it is' and occurs 'when he or she says it does.' However, patients in intensive care are often unable to clearly express the presence of pain.<sup>1</sup> A well sedated patient may appear pain-free but may not actually be receiving sufficient analgesia.<sup>2</sup> These patients may therefore experience severe pain without being able to communicate this. Data suggest that up to 70% of patients in the ICU have pain which is either not detected or not treated appropriately.<sup>3</sup>

Pain is a major cause of morbidity and can affect mortality by interfering with cardiovascular and respiratory physiology. ICU patients have many potential sources of pain which can impair or delay a patient's recovery and discharge.

Pain may be caused by the injuries or disease that resulted in admission to ICU. However, pain may also be caused or worsened by routine medical procedures, nursing care, or by the ICU environment itself. Medical procedures such as the use of IV lines, drains, catheters, or surgical incisions have the potential

to cause pain. Nursing procedures such as turning, tracheal suctioning, and dressing changes, may also cause pain. Delirium or sleep deprivation associated with the ICU environment may also worsen a patient's experience of pain.<sup>4</sup>

Although such potential sources of pain may appear obvious, studies have consistently demonstrated that pain in ICU patients is underestimated and undertreated. In one study nearly 80% of patients reported feeling pain whilst on ICU; approximately 30% of those reported their pain as severe and 60% reported their pain as moderate or severe.<sup>5</sup>

Basic medical or nursing procedures were identified as the most significant causes of pain.<sup>6</sup> The most painful and distressing nursing procedures were dressing changes and turning.<sup>6</sup> In one observational study only a fifth of patients received any additional analgesia prior to these procedures.

### CONCLUSION

The recognition of pain in ICU patients is extremely difficult. Assessment is hampered by reduced consciousness secondary to their illness or a requirement for sedation. Studies have consistently demonstrated that pain in ICU patients is under-recognised and undertreated. Changing sedation practice may improve patient morbidity by reducing the depth of sedation, or by prioritising analgesia over sedation.

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