Volume : 3 | Issue : 6 | June 2014 • ISSN No 2277 - 8179

Research Paper

Protocol for Analgesia, Sedation and Neuromuscular Blockade in ICU: Need of the hour

Medical Science

KEYWORDS : Intensive Care Unit, analgesia, protocol, institution

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ABSTRACT

Wide varieties of stresses are experienced by critically ill patients in intensive care unit (ICU) setup. This may include endotracheal tube and tracheal tube insertion, repeated suctioning, multiple needle pricks in arteries and veins, various surgical procedures like intercostal chest drain (ICD) insertion & venesection and bed sores. It has become an important part of the work of an intensivist to provide ICU care to alleviate the pain and provide comfort to the patient. Judicious use of medications such as analgesics, sedatives and neuromuscular blockers helps in providing ultimate comfort with least side effect. A thorough knowledge of basic pharmacology of these medications is required to use them judiciously. Physical and psychological comfort with light level of sedation is the basic aim of intensive care that can be provided by minimal drug usage. The following can be achieved by institutionalizing the protocols for analgesia, sedation and neuromuscular blockade in ICU.

Main Document

Pain in ICU

More than 50% of ICU patients experience one or other form of pain which can be expressed by some but others can't (1). Pain should be assessed properly using simple and reliable tests to provide proper management and improve the clinical outcome. Pain has been described by many patients during their ICU stay as their most common noxious memory (2). Chronic pain, post traumatic stress disorder and poor quality of life has been associated with such patients.

Tests to assess pain with high sensitivity and specificity are considered best for ICU care. Non Verbal Pain Scale, Behavioural Pain Scale (BPS), Critical Care Pain Observation Tool (CPOT) and Pain Behavioural Assessment Tool are few of them (3). The validity and reliability of BPS and CPOT is maximum for monitoring pain in ICU patients. For these tests, motor functions should be intact and behaviour should be observable. Both non pharmacological and pharmacological interventions can be used for the treatment of pain in ICU. A non pharmacological approach such as musical and relaxation therapy is cost effective, acceptable and without side effects but their effectiveness evaluation needs more research(4). In pharmacological approach, use of opioids along with non-opioids is recommended. Morphine, fentanyl, ramifentanyl, hydromorphone and methadone are commonly used opioids. NSAIDS, SSRI, pregabalin, gabapentin and anesthetic agents can be used as non-opioids. Being neurotoxic, meperidine is generally avoided in ICU. Safety of non-opioids in ICU is not clear (4). Gabapentine and carbamazepine can be used to treat neuropathic pain in patients with sufficient gastrointestinal absorption and motility (5).

Methods of analgesic dosing i.e. intermittent vs. continuous iv depends on drug properties, severity and frequency of pain and patients requirement and mental status (6). Post operative analgesia following selected surgical procedures may also be provided. Regional anaesthesia technique i.e. spinal and epidural anaesthesia may be used (7). Opioids are the drug of choice for non neuropathic pain in ICU. Non-opioids may be used as adjunct to opiods thereby decreasing the drug requirement.

Agitation and Sedation in ICU

Common causes of agitation in ICU are pain, hypoxemia, bladder discomfort, improper ventilation, psychiatric illnesses, lack of sleep, uremia and lack of communication. Sedation use for such condition is almost universal in ICU. Light sedation strategy is considered better than deep sedation and is associated with better clinical outcome (8). Use of proper sedation scale and sedation protocol is associated with shorter ICU stay, need of ventilator support and episodes of delirium (8, 9).

The two most commonly used sedatives in ICU are propofol and midazolam (10). Dexmedetomidine is also being increasingly used. Most common side effect of benzodiazepine is respiratory depression and hypotension. These side effects are more severe when used along with opioid and in elderly patients. Dexmedetomidine is associated with easy arousablity and minimal respiratory depression. Elderly age group, longer duration of administration, hepatic and renal dysfunction are associated with prolonged sedation. Propofol is associated with shorter duration of sedation. It is useful in patients requiring frequent neurological assessments and sedation interruption protocol (11). The Richmond Agitation Sedation Scale (RASS) and Sedation Agitation Scale (SAS) have the highest validity and reliability in measuring depth of sedation in ICU patients. RASS and SAS cannot be used in patients receiving neuromuscular blockade. For such patients, objective measures of brain function are used. Increased duration of hospital stay (11, 12), ventilator requirement (11, 12) and increased cost of treatment has been observed in sedation with benzodiazepines, though no difference in mortality was seen (12).

Protocolized Institutional Strategy

It is important to have an institutional integrated protocol that is evidence based and which can be used to assess, treat and prevent pain, agitation and delirium in ICU patients. Protocols help in providing evidence based practice bedside thus limiting any untoward variation in practice and thus reduces treatment delays (10, 13). Such practice has shown to improve patient outcome and may serve as a quality assurance guide (14). However such practice is still lacking and only 60% of ICU in developed countries work under such protocols. Working staff and nursing residents should be asked to follow the protocols.

It requires a multifaceted, interdepartmental coordination and dedicated team to have a protocolized approach. It is the need of the hour to develop institution based protocols keeping the above discussed issues in mind and also taking into consideration the patient, drug availability, availability of man force and cost effectiveness.

Conflict of interests: None

Volume : 3 | Issue : 6 | June 2014 • ISSN No 2277 - 8179

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