Patients or Rolling Stones:The Conundrum of Pain and Suffering in the Intensive Care Units-A Close Survey

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Pain is a blessing in disguise because it directs the attention of the person to the site of injury. Subsequently protective measures are adopted and thus an onslaught of future damage is averted .This scenario is seen in individuals who suffer from no cognitive impairment as is seen in our daily life and in postoperative patients who demand for an analgesic shot when their pain is unbearable. However, when the senses are duped and the patient is heavily sedated with sedatives as is the case in the Intensive Care Unit (ICU) setting, the demand or an urge for pain relief is subdued owing to the sopophoric effects of sedatives and such a patient is found to be reeling under the pangs of pain although apparently optimally sedated. To the care givers in the ICU, the patient is optimally sedated or perhaps over sedated exhibiting total compliance with the ventilator and thus dubbed to be in full comfort .However, the tentacles of the ongoing pain which have not been adequately tackled by the ICU personnel is reflected in the different systems of the body as clues that pain-an essential index of patients' suffering has been totally neglected. The cardiovascular system is the first to be affected by inadequate management of pain and it shows an overplay in the form of tachycardia, an increase in myocardial oxygen demand, a heightened excitability of the heart and intense vasoconstriction. These catecholamine related cardiovascular effects can be lethal for the patients with compromised or failing hearts. The vicious cycle does not end there and hormonal changes set in due to the ongoing pain in the form of hyperglycemia, hyperlactemia, an increase in blood viscosity, blood volume, an increase in potassium loss, and a reduction in sodium secretion. These insults which ensue as a result of total neglect or else inadequate management of pain further usher in a devastating blow to the different organs that are already in a fragile state or else are impaired as a result of repeated insults. As a result, the vulnerability of the myocardial conduction system is enhanced leading to ventricular arrhythmias and or fibrillation .The pulmonary functions are also affected and get deteriorated leading to atelectasis ,ventilation-perfusion mismatch, a delay in weaning from the ventilator, and ventilator assisted pneumonia. All these events ensue as a result of poor handling of pain in the ICU patient which eventually ends up in economic burden besides bringing in morbidity and mortality.

A small helicopter maneuvering over the hospital finally lands in the helipad .Emergency personal rush in and a patient is trolleyed to the ICU. That is the scenario that is repeated. Precious hours would be lost if the protocols are not attended to in toto. It is a herculean task but remember that a watched pot never boils. At times there are wrangles between the staff and patient`s relatives for inadequate care and such acrimonious exchanges further spark off additional commotion into a place which is already replete with noises and a hustle bustle. To me, the ICU patients need a preferential treatment because not only is the ICU an inhospitable terrain but it is a place where fear and uncertainty prevails. A flaw or defect in this environment tantamounts to tarnishing the high and lofty values of the patients' rights.

Harrowing scenes can be seen in the ICU not only by those who provide care but by the bystanders as well. There are moments when the staff are overheard chatting at the nurses' counter, and this is agonizing if the comments are hopeless regarding the patient`s fate. If pain remains largely ephemeral, that could be tolerated but an unremitting pain is beyond one`s comprehension to be tolerated. Relief of pain is an indispensible element of our treatment strategy and it should never be neglected. A debate reverberated some years back that the pain of ICU patients was never attended. Even when patients are being suctioned or rolled over from side to side, analgesics are still withheld.

Approximately 63% of patients experience pain during their stay in ICU (1). Payan *et al.* (2) found a low incidence (less than 2%) of specific analgesic use during procedural pain, specially suctioning and immobilization. In another survey of 24 ICU patients

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from two hospitals, 63% of the sample rated their pain as being moderate or severe (3).

Switching on a ventilator is not a garden hose you can turn on and off. It has its own implications. Although the intent is the wellbeing of the patient, nevertheless the use of a ventilator is not free from potential hazards. A patient with a tube in his trachea needs sedation and analgesia to overcome the intense anxiety and agitation. A compliance with mechanical ventilation is another aspect for which both sedation and analgesia become of paramount importance.

If pain is not relieved in the ICU patient, he squirms and writhes in discomfort. Such patients cannot express the pangs of suffering and the cumulative distress they are in. The accord was long on generalities- enough space, nice settings for the visiting staff. Enough has been said that different specialties and disciplines should forge better ties. There is currently no data as to how far we have been successful in this particular aspect .One thing however is starkly clear that pain in the ICU is being neglected .It is an ominous warning .The ICU is not a derelict place .We all know that opioids are the cornerstone in anesthesia but when it comes to the ICU setting, their role fades or dwindles owing to the fear of accumulation and difficulty in weaning from the ventilator. Why should patients in ICU be deprived of opioids when their beneficial role has been unequivocally established in anesthesia?

Classically patients in the ICU are managed using the traditional opioids such as morphine , fentanyl and sufentanil along with a benzodiazepine such as midazolam or a hypnotic such as propofol. This management modality per se has no pitfalls and has remained the modus operandi in the ICU setting for decades. However, if we cast an eye on the pharmacokinetic profile of these drugs, it appears that their metabolism and elimination half lives are significantly prolonged when they are used for days at a stretch and as continuous infusions. Hailed as the forerunner of all pain killers, the most widely used medication for pain management has been opioids with morphine as its prototype.

Fentanyl, another synthetic opioid has a speedy increase in context sensitive half time (CSHT) when given in the form of infusions. This property delays recovery after an infusion. Midazolam also has a slower CSHT and logically its action is significantly prolonged when administered in infusions. In situations where weaning from the ventilator is intended, these infusions should be stopped well in advance to aim at a vigilant , oriented and compliant patient. If these drugs are stopped, you end up with a non-compliant patient as pain ushers in. If you continue with the infusions, the patient fails to fulfill the criteria for weaning. Thus logically , one should choose an alternative approach to tackle the problem and this can best be solved by opting for the analog- based treatment regimen which aims at patients' comfort by catering for the analgesic needs of the patient and providing sedation only when necessary. Morphine is frequently employed in the ICU. If remifentanil is employed, patients are optimally sedated without the addiction of midazolam. It has been found that remifentanil-based sedation was more effective than morphine-based sedation (4). Among opioids, sufentanil may be a good choice for infusions lasting less than 8 hours because its CSHT slope crosses over at 600 min, while alfentanil`s CSHT is fairly flat after 2 hr. Remifentanil is metabolized by plasma esterases. It always has a CSHT of only 3-6 min. It rapidly attains target concentration following change in infusion rate and lacks any significant accumulation i.e., steady infusion rate = steady effect site concentration (5). Unlike the other opioids, it does not accumulate in the peripheral compartment and maintains a brief period of biological effect without any risk of accumulation, regardless of the disease and the time or duration of infusion . Numerous studies have reported the beneficial effects of remifentanil. Neither remifentanil nor sufentanil accumulated after a 24 h infusion period (6) as reported in patients being mechanically ventilated in the ICU.

In patients with anticipated short term duration of mechanical ventilation , a remifentanil-propofol analgo – sedation regimen provides better control of sedation and agitation and reduces weaning time compared to conventional regimens (7). Again in a pilot study , Welzing *et al.* (8) found that the combination of remifentanil and propofol was a promising option to improve the weaning condition of pediatric ICU patients (9).

The sedative based paradigm with the traditional opioids is associated with a pitfall of opioid accumulation if given for longer durations.

Remifentanil could be a useful substitute since it maintains patient comfort in terms of achieving sedation agitation score of 1-3 and pain intensity score of 1-2 , and at the same time allowing neurological assessment when the infusion is stopped. Additional sedation if needed was achieved with propofol or midazolam when the maximum infusion rate of 18 ug/kg/h for remifentanil was reached (10) .

Treatment modalities that can be employed in the

ICU setting includes intermittent or continuous systemic opioids , multimodal techniques, neuroaxial opioid analgesia and peripheral regional analgesic techniques. However, behavioral modalities and techniques such as patient controlled analgesia are generally less suitable for the congnitively impaired patient.

In conclusion , tens of people cram daily into the the ICU. The ICU at times resembles a thoroughfare with people moving in from cabin to cabin and from patient to patient dressed in white apron and other attire of different colorations ; and x-ray machines , ECG, EEG, sonography and echocardiography trolleys moved in and out besides a variety of inevitable noises and sounds produced by different appliances , gadgets and machines being heard all over the nook and corner of the ICU. To say the least, the entire environment is distressing and agonizing for the patients lying in their beds eagerly awaiting a panacea for their protracted illness and suffering. Patients who are not cognitively disabled are in a state of anguish and perturbation and casting a gingerly glance at them gives you an impression that you are in a cemetery rather than in an ICU. On their faces you see gloom , despair and suffering which they still experience. If on top of the all the inhospitality of the environment , the pain element is also added to the unremitting suffering of the patients, the environment of the ICU would tantamount to hell in all its totality.

Lastly, I may add that no drug is innocuous, and drugs if not tailored with ingenuity may sap the life of the patient.

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