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Mini Review

The Restless Acute Trauma Patient: A View Point from the Emergency Room of National Hospital Trauma Centre, Abuja, Nigeria

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Abstract

Trauma is the leading cause of death in young adults. The restless acute trauma patient poses a significant challenge to both self and care givers. The patient may be conscious or typically unconscious and may have traumatic brain injury or other injuries. Despite available systematic approach to the care of the injured patient, a deliberate attempt to identify possible causes of restlessness in each patient is a good practice. Simple, focused care tips using 'restrain guides' mnemonic has been suggested for easy recall and rapid care of restless patients in the emergency room. Local guidelines adapted from this tip will be useful in specific settings.

Keywords: *Restlessness; Acute Trauma; View Point; Emergency Room*

Introduction

Restlessness in a major trauma patient while in the emergency room can be quite distressing to the patient, patient's relatives and health care professionals. Restlessness in clinical setting has been defined as behaviour which interferes with care, therapy or safety, but either did not meet the severity criteria for agitation or was continuous [1]. This is different from agitation which is often seen in traumatic brain injury (TBI) patients.

Though this article is focussed on restlessness in order to accommodate non-TBI related causes adequately, in practice it is often difficult to differentiate between restlessness and agitation. Restlessness and agitation are well known sequelae of TBI [2,3]. Restlessness is also seen in a small fraction of non-TBI patients. Agitation was operationally defined as episodic motor or verbal behaviour which interfered with patient care, or clearly required physical or chemical restraints to prevent damage to persons or property, usually rated on overt aggression scale (OAS) [4]. While agitation consisted of uninhibited movements, restlessness was capable of inhibiting [5].

There are a couple of literatures on agitation in relation to TBI. Unfortunately, not much has been published in the area of restlessness in trauma patients in general. This study is intended to serve as a reminder to emergency physicians to look beyond the grey and white matters in acute trauma patients presenting with restlessness in the emergency room.

Practical considerations

Is the patient conscious?

Majority of patients presenting with restlessness in the trauma emergency room will have some level of altered consciousness. Many of these are due to TBI. According to the committee on trauma of American college of surgeons, it is a good practice to assume TBI in all

unconscious patients until proved otherwise [6]. However, it is important to avoid the error of ascribing all restlessness to TBI, especially when the mechanism of injury and pattern of initial assessment findings suggest otherwise. It is noteworthy that a reliable level of consciousness is recorded only after initial resuscitation of unstable patients [6]. It therefore means that an acutely injured patient, without TBI may present with altered level of consciousness in short term, before fully resuscitated.

Does the patient have TBI?

In defined TBI cases, agitation in addition to restlessness is very common and has been postulated as part of the recovery process after brain injury [5,7,8]. These changes, post TBI are a complex combination of lack of control (disinhibition, impulsivity, aggressiveness) and lack of drive (apathy) associated with disordered higher-order cognitive functions involved in goal directed behaviour [9]. An agitation episode is said to occur in 11% to 70% of patients with severe TBI [1,10]. Despite a large amount of research in this area particularly in TBI, these troubles remain difficult to understand, assess and treat, thereby representing a challenge for rehabilitation professionals [11].

Non-TBI related restlessness represents a smaller but important proportion of restless acute trauma patients. In majority of non-TBI related patients, restlessness is not typically accompanied by agitation even when the patient is unconscious. It is important to reemphasize that a fully conscious major trauma patient can be restless, posing a further diagnostic dilemma to the trauma team.

Possible aetiological factors

We have outlined, in general some of the commonest causes of restlessness among acute trauma patients observed and managed in our emergency room over the past years. Causes of restlessness in chronic and non-trauma conditions are not included in this article.

It is imperative to note that initial assessment and resuscitation of a major trauma patient based on ATLS principles irrespective of the injuries or the level of consciousness may be sufficient to prevent or treat restlessness in acute trauma patients. However, when restlessness persists, the following possible causes should be deliberately sought for:

1. **Traumatic brain injury**: Restlessness from traumatic brain injury is well studied and documented [9,12].

2. **Hypoxia**: Hypoxia is the leading cause of restlessness in acute trauma patients. It is equally indirectly related to other causes. However, it is listed separately to emphasize its importance.

3. **Pain**: Pain is considered as one of the commonest causes of restlessness in acute trauma patients. It is also an independent cause of restlessness in unconscious trauma patients. A typical example is pain from fractures that have not been splinted, even when analgesics have been given. Pain has been listed as one of the causes of restlessness in unrelated studies [13].

4. **Full urinary bladder**: Full bladder particularly in the presence of altered level of consciousness is a common cause of restlessness after injury. It is present even in catheterized patients when the catheter is kinked, blocked or obstructed by patient's position. As a rule, a full bladder should always be sought in restless acute trauma patients, even when the patient is having indwelling drainage catheter.

5. **Hypotension**: Hypotension and shock is a very important cause of restlessness in acute trauma patients. Some patients may have altered level of consciousness due to shock and so prone to restlessness. Again, the pathology is indirectly related to hypoxia in specific terms.

6. **Hypoglycaemia**: Though hyperglycaemia may be an accompaniment of metabolic response to trauma, hypoglycaemia when it is present may lead to restlessness. This is particularly important in known diabetics, elderly patients and fasting trauma patients.

7. **Specific injury related**: Some injuries irrespective of other factors are prone to restlessness, partly because of discomfort and partly due to the location of the injury. Examples include maxillofacial injuries, chest trauma and extremity crush injuries.

8. **Infection**: Occult infection in trauma patients may result in restlessness as part of its symptoms. This could be a systemic or a localized infection. There may be associated itchy sensation. A systematic review of the literature has listed Infection as one of the organic causes of restlessness in acute trauma patients [14].

9. **Environmental factors:** Environmental factors like bright procedure light shinning directly on the patient's face, and a rowdy and noisy emergency room may precipitate restlessness in some predisposed patients. Several other external factors can trigger anxiety and heighten the agitation. These include contention, excessive stimulation, as well as an aggressive attitude from family and health care professionals [15].

10. **Side effects of medications**: Certain drugs administered to trauma patients for variety of reasons may manifest restlessness as part of its side effects. A typical example is psychotropic drugs [15].

11. **Electrolyte imbalance**: Electrolyte imbalance and metabolic syndrome are not common in early phase of acute trauma when the patient is still in the emergency room. However, some patients with certain pre-morbid conditions may present with electrolyte imbalance precipitated by trauma, which may manifest with restlessness.

12. **Withdrawal syndrome**: Withdrawal syndrome is not a common cause of restlessness in acutely injured patients. Patients who are experiencing sudden withdrawal from some drugs or alcohol as a result of their injuries may present with bizarre symptoms including restlessness. In this group of patients who are often addicts, the index trauma may be related to the substance or alcohol abuse. A typical example is seen in opiate withdrawal syndrome [16].

Focused care options (Restrain guides)

Personal safety and protection from physical harm and biohazards should be ensured while caring for a restless patient. Patient should in turn be protected from falls and self-injury and so should not be left unattended to. In addition, extra precaution should be taken in this era of COVID 19 pandemic [17]. Simple treatment options based on the identified or suspected causes have been suggested. Though the emphasis is on treatment of identified cause, these tips have been presented in an easy to recall restrain guides mnemonic as outlined below. A further schematic representation of the care is presented in figure 1.

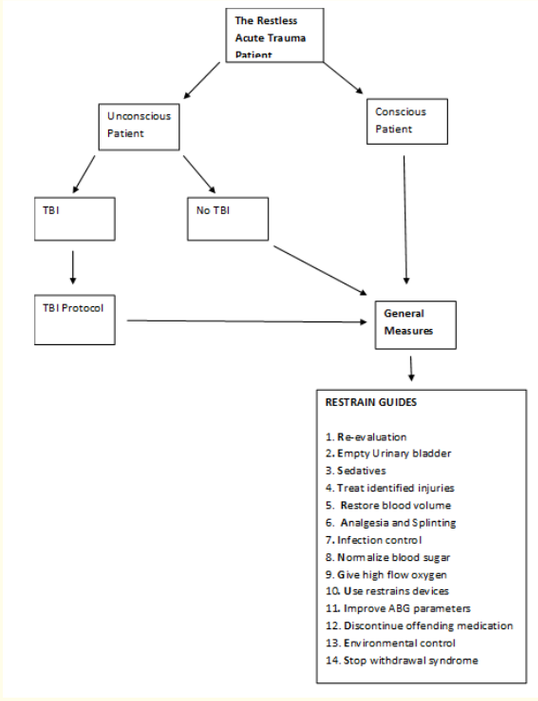

Figure 1: *A schematic representation of the care of the restless acute trauma patient.*

1. **R**e-evaluation of initial assessment and resuscitation steps.
2. **E**mpty the urinary bladder.
3. **S**edatives: Sedatives and other drugs targeted at calming down the patient should be used with caution. They are generally considered when simple and non-pharmaceutical options are not satisfactory. Sedatives are particularly important when bed side procedures are indicated in such patients or when the patient is to be transported out of the emergency room for radiological and imaging investigations. Several articles have reviewed the use of over ten different groups of drugs and suggested that there is limited evidence to accurately guide clinicians in the management of this patient population [18]. However, local protocol should guide the use of such drugs. Consultation with anaesthetists may be necessary.
4. **T**reatment of identified injuries: Definitive treatment of identified injuries should be carried out promptly.
5. **R**estore blood volume: Intravenous fluids and blood transfusion should be given as needed to combat shock. Surgical procedure for haemostasis may be needed.
6. **A**nalgesia and splinting: Adequate analgesia should be given based on the existing local protocol. In the absence of any contraindication, the use of opioids in small but frequent doses is recommended.
7. **I**nfection control: Identified infections should be treated appropriately.
8. **N**ormalize blood sugar: Hypoglycaemia should be corrected in a timely fashion.
9. **G**ive high flow oxygen: High flow supplemental oxygen should always be given to major acute trauma patients especially during the initial assessment.
10. **U**se restraint devices: Restraint devices are usually the last resort. A very recent study revealed that restraints are usually used when patients are considered a danger to self or other [19]. Care should be taken to avoid constriction of the limbs with its attendant harm.
11. **I**mprove arterial blood gases (ABG) parameters and correct electrolyte imbalance where indicated.
12. **D**iscontinue offending medications: Drugs with significant side effects contributing to restlessness should be withdrawn and replaced by suitable alternatives.
13. **E**nvironmental control: Minimize unnecessary stimulation of the patient, avoid bright light especially on the patient's face and eliminate excessive noise in the emergency room.
14. **S**top withdrawal syndrome: Management of identified withdrawal syndrome should be done in consultation with the psychiatrist.

Conclusion

Restlessness can be quite distressing to the patient and everyone else involved in the management of such patients. Centre based local guidelines will be an important tool in identifying the possible causes and treating the patients in acute trauma setting.

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