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RTA – SEVERE TRAUMATIC BRAIN INJURY WITH MAXILLOFACIAL INJURY: A CASE REPORT

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ABSTRACT Traumatic brain injury has the highest prevalence among all the neurological problems, making it a public health burden not only around the world but also in India. TBI with maxillofacial injury poses a significant risk to the public. Despite the improvement of medical treatment, the mainstay treatment is to limit secondary brain injury, and the prognosis is even more challenging than the treatment itself. In this case report, we demonstrated a 24-year-old male patient who presented with a traumatic brain injury with a maxillofacial injury after a collision with a divider in the middle of the highway.

KEYWORDS : RTA, Severe traumatic brain injury, maxillofacial injury, Case report

INTRODUCTION

A traumatic brain injury (TBI) is an injury that happens due to an outside force such as a blow, a foreign body entering the brain, or a jolt to the head. Due to this, the damage can be confined to one area (focal injury) or it may spread to a widespread area (diffuse injury), which could be very fatal for the patient. The injuries mainly have two types, such as penetrating and non-penetrating injuries. However, due to the severity of the damage, the situation could get worse [1]. TBI is often called a 'silent epidemic' that claims a lot of lives in a year. Globally, around 69 million people suffer from TBI, and around 4.7 million deaths occur annually [2]. In India, TBI has become a national crisis where the cases are the highest in the world, where one out of six victims will die eventually, 100,000 lives are lost every year, and more than one million people suffer head injuries [3]. One of the devastating conditions that could occur along with TBI is maxillofacial injury, which could occur due to physical outside forces (bites, burns, etc.) [4]. and it is the leading cause of damage to the facial soft tissues and bones [5]. Maxillofacial injury is very common among adult males, and in the majority of cases, the injury involves the maxilla, zygomatic, and mandible [6]. We report a case of a 24-year-old male who met with a road traffic accident with a clinical presentation of a head injury with severe laceration in the forehead and mandible.

Patient Information

A 24-year-old male was admitted to the lower Assam hospital and research centre at the emergency department on July 9, 2024, with a history of road traffic injury (RTA) and a clinical history of a severe lacerated wound on the forehead with facial injury.

Clinical Findings and Timeline

On examination, the patient was found semi-conscious (GCS: $E_3 V_2 M_3$) with bleeding from the nose and mouth along with swelling in both eyes, B/L crepitation, P/A soft and nontender, temperature: 98^0 F, pulse: 76 b/m, Respiratory rate: 18 b/m, spo2: 98% and RBS: 130 mg/dl. Furthermore, patients also had multiple episodes of vomiting.

Diagnostic Assessment

All the relevant emergency investigations were done upon the arrival of the patient. The blood test report shows CBC: HB: 14.6 gm%, ESR: 05, TLC: 15,300, DLC: N34 V60 M04 E02, PT time: 13.0 sec, platelet count: 4.4 lacks, and WBC count (total): 16.84*. A CT scan of the cervical spine did not reveal any significant abnormalities. A CT scan (NECT brain) report shows a communited depressed fracture of the anterior frontal bone involving bilateral frontal sinus walls along with bilateral retro maxillary soft tissue emphysema. A fragment of the right mastoid cortex was also seen. USG whole abdomen shows hepatomegaly with grade II fatty liver, splenomegaly, small left renal calculus, and FAST+ve. Stool-occult blood was positive.

Therapeutic Intervention

On arrival, suturing and dressing of the lacerated wound on the forehead were done on an emergency basis. ANP nasal packing was given along with Foley's catheter insertion. Furthermore, Inj. Rectocef SB 1.5 gm IV X BD, Inj. Levigress 500 mg IV X BD, Inj. Trenaxa 500 mg IV X TDS, Inj. Vitamin K IV X OD, Inj. Ondem 4 mg X TDS, Inj Merimol 100 ml IV X TDS, IV Fluid NS Û RL at 100 ml/hr, Inj. Midazolam infusion IV at 6 ml/hr (with syringe pump), Inj. Maxthio 2 amp in 100 ml NS, IV X OD, and Vancomycin 500 mg IV X OD were given.

DISCUSSION

TBI can be life-threatening and needs urgent medical intervention. Depending on the severity of the injury, the TBI can be mild, moderate, or severe. The management process involves both onsite and hospital management. In an emergency, immediate measures should be taken with regards to the airway, breathing, and compression. Once the resuscitation is done, the patient should be checked for any fractures in the spinal cord or any internal and external haemorrhages [7]. At the time of hospital admission, the GCS scale should be checked to see the consciousness of the patient and the impact of the injury. Before starting the treatment, a proper check-up and the pathology of the condition should be understood. CT-scan and MRI are the two gold standard imaging techniques to understand the extent of the injury. However, depending on the vascular involvement, cerebral angiography can be performed. If a penetrating injury is suspected, then it is recommended to remove the foreign material from the brain within 12 hours of the injury. However, the removal of a foreign body also depends on the type, extension, and depth of the injury, which could be worse for the patient. Therefore, healthcare workers should focus on reducing intracranial pressure [8]. Among the surgical interventions, craniotomy, cranioplasty, and burr hole are some of the options in case there is vascular structure involvement causing intracranial hematoma. In the case of necrotic brain tissue, it should be debrided safely. On the other

hand, deep brain tissue surgery should be avoided if the eloquent region is involved [9]. There are many complications of brain injury where posttraumatic epilepsy incidence is very high in cases of posterior brain injury, and the prevalence ranges from 10% to 15% in adults and 30% to 35% among children [10-11]. The mortality rate is high after any type of brain injury. However, if there is involvement of the frontal lobe, the prognosis could be better than posterior fossa involvement.[10] Furthermore, proper medical and nursing intervention and care are very important for the overall health improvement of brain injury patients.

CONCLUSION

Traumatic brain and facial injury due to RTA is very common in India, and different patients will show different pathologies and dynamics depending on the location, type, and extent of the injury. Treatment of TBI and maxillofacial injuries is very complex, and treatment should be given according to the latest evidence-based medicine. In addition to this, a multidisciplinary healthcare approach should be taken along with medical treatment for optimal care.

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