

UPPER DIGESTIVE BLEEDING IN PATIENTS WITH TRAUMATIC BRAIN INJURY

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Abstract: The aim is to evaluate upper digestive bleeding occurrence in patients with traumatic brain injury and to emphasize the severity of craniocerebral trauma and superior digestive hemorrhage association. We performed a retrospective study on 4491 patients with traumatic brain injury, admitted into the Emergency Clinical Hospital Bagdasar-Arseni, on a two years period of time. From the study group, 617 (13.73%) patients presented at least one episode of upper digestive bleeding. We analyzed aspects related to upper digestive bleeding occurrence, medical treatment, indications for surgery, operation type and outcome. Traumatic brain injury frequently causes upper digestive bleeding. Two periods with high risk for development of upper gastrointestinal bleeding can be found. Severity of traumatic brain injury and co-morbidities are important factors in upper digestive bleeding occurrence. Timing for conservative treatment or surgery must be adapted to each case. Association between traumatic brain injury and upper digestive bleeding is a frequent and severe, solving it, requires mobilizing all medical and surgical resources available.

Cuvinte cheie: hemoragie digestive superioară, traumatism craniocerebral

Rezumat: Scopul este evaluarea apariției hemoragiilor digestive superioare la pacienții cu traumatisme craniocerebrale și de a evidenția gravitatea asocierii unei traume craniocerebrale cu sângerare digestivă superioară. Am realizat un studiu retrospectiv pe 4491 pacienți cu traumatisme craniocerebrale, internați în Spitalul Clinic de Urgență Bagdasar-Arseni, pe o perioadă de doi ani. Din lotul avut în studiu, 617 (13,73%) pacienți au prezentat cel puțin un episod de hemoragie digestivă superioară. Am analizat cauzele legate de apariția hemoragiei digestive superioare, tratamentul medical, indicațiile tratamentului chirurgical, tipul intervenției chirurgicale și prognostic. Traumatismele craniocerebrale determină frecvent hemoragie digestivă superioară. Au fost evidențiate două perioade de risc pentru apariția hemoragiilor digestive superioare. Severitatea traumatismului craniocerebral și comorbiditățile sunt factori importanți în apariția hemoragiilor digestive superioare. Perioada de timp în care se poate adopta o atitudine conservatoare sau chirurgicală trebuie individualizată pentru fiecare caz și rezolvarea presupune mobilizarea tuturor resurselor medicale și chirurgicale avute la dispoziție.

INTRODUCTION

Since the nineteenth century Rokitsky found a connection between nervous system impairment and subsequent gastric and duodenal mucosa lesions, supporting the assertion that "ulcer is a disease of the nervous system".(1)

In the early twentieth century, Cushing described, as a completely distinctive pathology, ulcer occurring in patients with traumatic brain injury, which is rapidly complicated with bleeding or perforation.(2-4) The concept of stress ulcer was described in literature in 1936 by Hans Selye, and this concept is preserved in most situations today.(5)

Based on a large casuistry, Arseni et al, after multiple experimental research and clinical observations managed to prove a connection between premotor area, frontal lobe, superior and medium frontal gyrus, thalamus, walls of the third ventricle, on the one hand, and digestive tract, on the other.

AIM

The aim of this article is to evaluate upper digestive bleeding occurrence in patients with traumatic brain injury and to emphasize the severity of craniocerebral trauma and superior gastrointestinal hemorrhage association.

MATERIAL AND METHODS

We analyzed a group of 4491 patients, admitted into the Emergency Clinical Hospital Bagdasar-Arseni, in two years (July 2007 - June 2009), with traumatic brain injury, with various severity grades. From the total of 4491 patients, 617 develop at least one episode of upper digestive bleeding, following traumatic brain injury.

We aimed:

- highlighting the factors that led to upper digestive bleeding in patients with traumatic brain injury;
- importance of concomitant co-morbidities;
- establishing clear indications of surgery for upper digestive hemorrhage unresponsive to conservative treatment.

RESULTS

Main causes for traumatic brain injury were road traffic accidents, followed by occupational accidents and assaults, occurring mostly in young and middle age people. The severity of traumatic brain injury was evaluated according to Glasgow Coma Scale.

We did not notice a perfect parallelism between the

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CLINICAL ASPECTS

Glasgow Coma Scale and the frequency of various complications, but however, we found that as it decreases, the frequency of respiratory and digestive complications dramatically increase.

The 617 patients, who had upper digestive hemorrhage, underwent initial medical treatment and 526 patients (85.26%) had favorable outcome under conservative therapy.

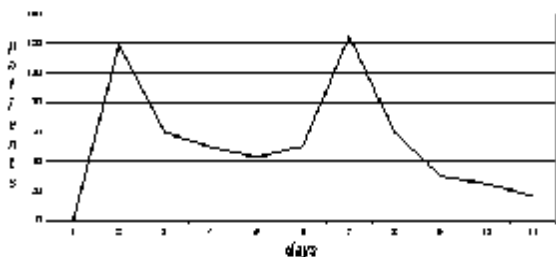
The diagnosis of upper digestive hemorrhage was frequently established clinically, patients presenting hematemesis and/or melena. Rarely this diagnosis was established after random superior digestive endoscopy, which revealed lesions presenting stigma of bleeding, but not active hemorrhage.

We found two critical periods of time in upper digestive bleeding of various causes occurrence (Fig. 1):

- on days 3 - 4 from admission - "acute causes", induced by aggressive treatment with nonsteroidal and steroidal anti-inflammatory drugs to reduce craniocerebral symptoms; suddenly installed hypovolemic shock and increase gastric acid secretion amid neurosurgical pathology;

- on days 12 - 13 from admission - "chronic causes": prolong orotracheal intubation carrying a high risk of infections, even leading to toxic-septic shock; prolonged suppression of oral nutrition; co-morbidities and, sometimes, older age of the patient.

Figure no. 1. Critical periods in upper digestive bleeding occurrence.



Due to lack of technical possibilities to perform upper gastrointestinal endoscopy or hemostatic angiography, the percentage of patients who required surgery was 14.74% (91 patients).

In our department, in almost half of patients, we performed bilateral truncular vagotomy with pyloroplasty with/without "in situ" hemostasis.

Following surgical and conservative treatment, mortality was quite high - 34.06%.

DISCUSSIONS

Advances in diagnosis and treatment methods facilitated prolonging life expectancy of such patients, well above the limits once imagined, but also opened the door to serious complications, which otherwise would not have had time to appear.

Association of traumatic brain injury and upper digestive bleeding implies multiple bioumoral and organic changes, grouped into self-aggravating vicious circles (impossibility of cortisone medication withdrawn due to cerebral lesions, drugs aggressive on gastric mucosa), resulting in the end "an equation with multiple unknowns", whose resolution requires a dynamic analysis of all factors and parameters involved and an elastic understanding of the triggered phenomena, in order to orientate therapy.(7)

Often these serious situations requiring urgent

therapeutic measures, in comatose patients, with significant co-morbidities, which exponentially increase the risk of upper digestive hemorrhage and require a quick settlement after close collaboration between neurosurgeon, general surgeon and anesthesiologist.(8)

Establishing the surgical and anesthetic risks and the need for of surgery, allow us to decide on the opportunity of operation and patient outcome.

Regardless of the stringency during the intraoperative or postoperative periods, incidents, accidents and complications related directly or indirectly to surgery, co-morbidities and applied therapy may arise. The variety of accidents and complications is very high, and their implications may deeply weight patients' outcome. The role of intensive care is to early detect, by monitoring, the occurrence of these events, and to prevent them and treat them effectively when installed.

Often difficulties emerge from establishing the grade of emergency, timing of therapeutic measures and choosing optimal conservative treatment or most appropriate surgery for each patient. This is evident in politrauma with multivisceral lesions, often with the involvement of various anatomic-topographical areas. Association of several, mutually aggravating injury, creates a complex clinical situation, which implies a multifactorial etiology and which requires a multidisciplinary therapeutic approach.

CONCLUSIONS

Traumatic brain injury causes significant neurological sequelae and multiple complications, among which respiratory and digestive are the most frequent. Two periods of time carrying high risk for the development of upper gastrointestinal bleeding can be found. There is a direct relationship between Glasgow Coma Scale and upper digestive bleeding occurrence, but not a perfect parallelism. Co-morbidities and chronic diseases are extremely important factors in upper digestive bleeding occurrence. Timing for conservative treatment or surgery must be adapted to each case, taking into account clinical, biological and outcome parameters. Association between traumatic brain injury and upper digestive bleeding is a frequent and severe and solving it requires mobilizing all medical and surgical resources available, through an excellent collaboration between general surgeon, neurosurgeon and anesthesiologist.

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