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RETROSPECTIVE STUDY OF OPERATED CASES OF TRAUMATIC BRAIN INJURY IN MGM MEDICAL COLLEGE AND HOSPITAL, NAVI MUMBAI.

Neurosurgery

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ABSTRACT

Introduction: Traumatic brain injury (TBI) is a leading cause of morbidity, mortality, disability and socioeconomic losses in India and other developing countries. Road traffic accidents (RTA) are the leading cause of TBI.

Methods: This study was carried out in MGM Medical College and Hospital, Navi Mumbai. A total number of 166 cases of TBI who underwent emergency craniotomy, from April 2013 to November 2017, were studied retrospectively.

Results: Maximum number of cases were due to RTAs (79.50%). Out of 166 operated cases, 67 were Epidural hematoma (EDH), 65 were Acute Subdural hematomas (ASDH), and 31 were Intracerebral hematomas (ICH). Survival rate of EDH (89.70%) was excellent, whereas ASDH (53.89%) and ICH (54.8%) had poor survival rate.

Conclusion: Surgery plays a vital role in the management and outcome of the patients with severe TBI.

KEYWORDS

TBI, RTA, Emergency Craniotomy.

INTRODUCTION:

TBI is a major public health problem in India. The increase in economic growth of India has resulted in rise of population, increased number of vehicles and industrialization, which has contributed to a significant increase in Traumatic Brain Injuries. TBI results in deaths and disabilities in all age groups. Most victims are young adults, who are in the most productive years of their life.[1] It is seen higher in males than in females.

India has emerged as the capital of head injuries in road accidents across the world.

Road safety has become an issue of concern both at national and international level. The analysis of road accident data 2016 reveals that about 1,317 accidents and 413 deaths take place every day on Indian roads which further translates at least 17 deaths occurred in road accidents in 55 accidents every hour in the given time period as stated by Government Of India, Ministry Of Road Transport & Highways Transport Research Wing 2016. Comparing the new recordings with data from previous year shows that in spite of recording fewer accidents in 2016, more deaths have occurred this year as in 2015.[2]

Road accidents are caused due to various factors like the vehicle population, human population and adherence of road safety regulations.

TBI patients exhibit a wide spectrum of injury pattern and severity ranging from trivial scalp lacerations to grossly disruptive, fatal brain injuries.[3]

Management of TBI presents extensive challenges for Neurosurgeons worldwide. The complexity of the injury, which is usually associated with trauma to other organ systems, makes decisions about medical or surgical management critical to patient outcome. In the past many Neurosurgeons regarded surgery for post traumatic intracranial hematoma to be unrewarding. The most dangerous consequence of severe TBI is the development of Inta cranial hematomas, also known as "Mass Lesion", which accounts for approximately 70% of the cases of clinical deterioration. Surgery plays a vital role in the management of patients with severe TBI and concomitant intracranial hematomas. Only a third of patients who sustain a severe TBI are candidates for craniotomy. For surgery to positively affect outcome, hematomas must be indentified early and mass lesions must be evacuated promptly.[4] CT scan of the brain is the investigation of choice during this process. Clinical profile (GCS) and CT findings are correlated to decide management if to be operated or conserved.

EDH or collection of blood between skull and dura are less common than ASDH. EDH occurs in 6% of patients with severe TBI. EDH is almost always associated with a skull fracture (91%) in adults and 75% in children. The outcome of patients with EDH depends upon their neurological status at the time of surgery. EDH is one of the most urgent neuro surgical emergencies, because it is commonly associated with rapidly evolving brain compression and prompt evacuation is indicated. Mortality rate varies from 0% for patients who were not in coma, to 9% for obtunded patients, to 20% who were in deep coma.[4]

ASDH is the most common focal intracranial lesion and occurs in 24% of patients of TBI. ASDH is located between dura and brain, usually results from a torn bridging veins between the cortex and draining sinuses. ASDH remains one of the most lethal of all TBI with reported mortality rates of 30-90%. The extent of secondary brain injury may be most important than the ASDH itself in dictating outcome.[4]

ICHs are more common and occurred as the primary lesion in 10% of patients with severe TBI. Almost 15% of fatal TBI harbour ICH. Prognosis is poor with 50-60% mortality and increased morbidity in majority of patients.[4]

Raigad district has three major roads: Mumbai-Pune Expressway, NH-4 connecting from Panvel to Kanyakumari via Bengaluru and NH-66 connecting from Panvel to Kanyakumari via Goa. MGM Medical College and hospital, Kamothe, Navi Mumbai is located at the confluence of all above mentioned arterial roads and is the only tertiary care hospital in Raigad district where Neurosurgery care is given to patients 24x7x365 days.

India has a huge shortage of Neurosurgeons. We have one Neurosurgeon per 11 lakh population, while WHO recommends one Neurosurgeon per lakh population,[1] Hence establishment of more neurosurgery centers will have a direct impact on the final outcome of TBI.

Aims and Objectives:

1. To study the causes and types of operated cases of TBI.
2. To study the outcome of operated cases of TBI.

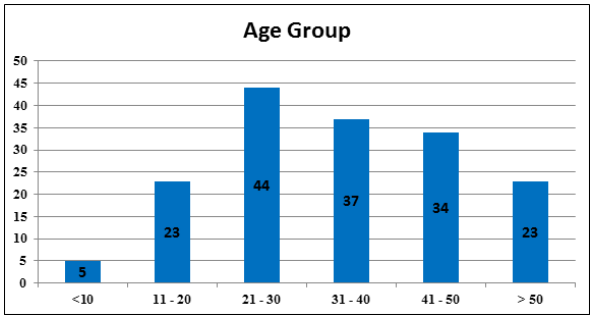
Material and Methods:

Inclusion criteria:
1. All cases of TBI who presented to MGM Medical College, Navi Mumbai and underwent Emergency operation as per indication.

Exclusion criteria:
1. TBI with casualty death
2. DAMA (Discharge Against Medical Advice)
3. Relatives not willing for surgery

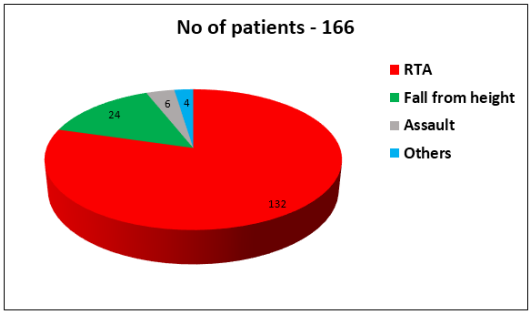
A total number of 166 operated cases of TBI from April 2013 to November 2017 were retrospectively studied. All the information relevant to our study was collected from OT registers and case files, and were filled in our proforma. Data collected were analyzed by various measures like ratios, percentage, etc.

Results:
Out of total 166 operated cases for TBI, we noticed 133 were male and 33 females. Male to female ratio was 4.03:1.



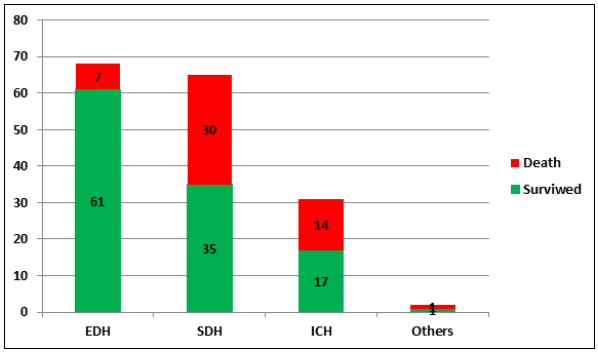
Graph no 1: Age group

As shown in Graph no 1: Maximum cases were from age group of 21-30 years (26.50%) followed by 31-40 years (22.28%) and 41-50 years (20.48%). Youngest patient was of 8 months old (EDH) and oldest was 80 years old (SDH).



Graph no 2: Causes of TBI

As shown in graph no 2: maximum cases were due to RTA (79.5%) followed by fall from height (14.4%) while assault and others contributed to 6.1%.



Graph No 3: Types of operated cases and outcome.

As shown in graph no 3: Types of operated cases and outcome: We noticed that there were 68 cases of EDH, followed by SDH (65), ICH (31) and others being 2 cases. The survival was excellent with EDH (89.70%) while SDH and ICH contributed to 53.84% and 54.8% respectively. Others included 2 patients operated for compound depressed fracture skull, out of which one survived and one expired.

Discussion:
Early diagnosis and treatment of the injuries has been the most important strategy in management of TBI.

In our study, 133 were male patients and 33 were female patients, and male to female ratio was 4.03:1, while the study by Prashant et al it was 3:1.

Youngest patient in this study was of 8 months female child with Left sided Epidural hematoma and 80 years female with Right Subdural hematoma was the oldest, while study by Chandra Shekhar et al showed that the youngest case of TBI was 1 month old and the oldest was 92 years.

Maximum cases were from age group of 21-30 years (26.50%) followed by 31-40 years (22.28%) and 41-50 years (20.48%), while study by Prashant et al showed maximum cases from fourth (29.86%), decade of life followed by third(21.15%) and fifth decade(19.23%).

In our study RTA was the commonest cause of TBI accounting for 79.5 %, followed by history of fall making up to 14.4% and others being 6.1%. This is attributable due to the location of MGM Hospital at the confluence of three major highways, while study by Dr. Narwade of D.Y.Patil School of Medicine, Nerul showed RTA in 37 % of patients. Also study conducted by Jennet et al. showed 54% of RTA.

We noticed maximum cases of EDH (40.96%) followed by ASDH (39.15%) while study conducted by K. Haselsberger showed 35.08% of EDH and 64.92% of ASDH out of 171 cases.

In our series, survival rate for EDH was excellent (89.70%) and poor with ASDH (53.84%) and ICH (54.8%).

In study conducted by Md Anisul Islam Khan, Bangladesh 28 cases (29 %) out of 96 patients operated for ASDH expired post operatively.

Conclusion:
In our study we noticed that our findings were consistent with other literatures. Males were predominant, particularly from the younger and productive age group. RTA was the most common cause of operated cases of TBI. EDH and ASDH were the common findings among which outcome was excellent with EDH. Prompt and definitive care has changed the survival rate. Though surgery plays a vital role in the management and outcome of the patients with severe TBI it is always to keep in mind that prevention is better than cure.

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