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ORIGINAL ARTICLE

Incidence of drug dependence and epilepsy in patients with PTC (Post Traumatic Contusions) manage conservatively. A prospective study.

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ABSTRACT… Objective: To explore the presence of drug dependence and Epilepsy in patients with PTC (Post Truamatic Contusions) balanced cautiously. **Study Design:** Proposed Reviewed Research study. **Setting:** Hayatabad Medical Complex, Peshawar. **Period:** July 2020 to December 2020. **Methods:** About 90% of patients aged between fifteen to sixty-five years old identified with cerebral lesion and balanced cautiously were applied. Follow up sessions was provided to patients for 12to 18 months. **Results:** Among the enrolled patients, 23% established early PTS (Post Traumatic Seizures) and approximately established late PTS (Post Traumatic Seizures) from mild to moderate level of cerebral lesion. Patients having early signs of Post traumatic Seizure, about 6% utilized AEDs (Anti-epileptic Drugs) for about 3 months throughout the treatment period and about 7% of patients along with late Post Traumatic Seizures utilized AEDs. Moreover, approximately 8 percent patients established late post traumatic Seizure without considering any early signs of condition. Research findings indicated that only 3% of patients with early and late PTS actually required AEDs for at least 6 months. Although, about 44 percent of patients were utilizing Anti-epileptic drugs to control seizures. Sensible usage of Anti-epileptic drugs is familiar in our region, contributing to enhanced danger of medicine opposition and acquiring financial pressure on low-paid people in well-established state. Additionally, extreme usage of anti-epileptic and prophylactic drugs doesn't impact the occurrence of PTE (Post Traumatic Epilepsy). **Conclusion:** The presence of late and early post-traumatic epilepsy observed within our study is contrast to that explored in another research. Sensible production of AEDs is occured in our state, that increases the danger of medicine opposition and attain financial issues for economically destruct people in well-established states. Extreme usage of AEDs and prophylactic drugs doesn't have an important influence on stopping PTE.

Key words: AEDs, Computed Tomography (CT), PTC, PTE, TBI.

INTRODUCTION

TBI (Truamatic Brain Injury) is brain lesion which can be mild, medium, or extreme level of condition. Within UK, about 300 population will encounter from TBI every year.[1] Within Pakistan, about third of the population has traumatic brain injury, and approximately 10 percent had extreme and medium level of Truamatic brain injury.[2] Signs based on the form of condition, and the section that is impacted by lesions but mostly visualized as headache, vomiting, dizziness, seizures, and modified sensorium. Non-increment compared to CT (Computed Tomography) which is the identification technique for the brain injury.[3]

The main signs of condition include infection, fits, behavioral transformation, poor cooperation, enlarged dizziness, brain parenchyma, brain lesions, and bruising. Approximately 20 to 30 percent extreme level of brain contusions are visualized in adults, and 55 percent within patients who are pediatric existing by direct contusion.[4] They occur as combined contusions on Computed Tomography (CT) act as heterogenous sections of infarction, hemorrhage, and necrosis. They could be maintained surgically and non-surgically through clear guidance. Brain lesions can enhance as time passes and monitoring process is necessary for this.[5]

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About 20 percent of the population are suffering from PTE or PTS and are larger in brain contusions. Head lesions are significantly single element to foster the presence of post traumatic epilepsy. PTE exist in children and young people.[6] Post Truamatic seizures is a risk element for Post traumatic epilepsy nearly with the indication of about 25 to 30 percent in extreme level of brain lesions or indication of late brain injury in 10 to 13 percent of two years of head contusion.[7]

AEDs and Prophylactic drugs are a necessary intervention in the section of neurosurgery.[8] Drugs are utilized to stop epilepsy within patients who are at larger potency of establishing traumatic head contusion and neurosurgical process. Although, it is essential to visualize the production of AEDs for seizure prophylaxis does not frequently modify the indication of PTS or PTE, except in the case of high-risk patients.[9]

However, no local information is accessible and global direction not being assessed each patient acknowledged with Truamatic Brain Injury is receiving AEDs drugs despite of seizure and highlight as Post traumatic Epilepsy. If Post traumatic seizure is not present then AED and Prophylactic drugs has no influence in depleting the indication of post traumatic epilepsy. But within our community, there is no appropriate treatment procedure and patient visits towards the hospitals so mostly population attain antiepileptic drug for longer period and this contribute to establish post traumatic epilepsy. Therefore, we desire to perform research paper to identify the presence of drug dependence and epilepsy within our patient along with PTC.

Study Design and Setting

This was a prospective observational study conducted at Hayatabad Medical Complex, Peshawar. The study enrolled 90 patients diagnosed with cerebral contusions over a period of six months, from July 2020 to December 2020, following approval from the ethical committee (686/EC/HMC/20-9-20).

Inclusion Criteria

All patients between the ages of 15 and 65 years who were admitted to the causality department of neurosurgery and followed up for one year were included in the study.

Exclusion Criteria

The following patients were excluded from the study:

1. Patients outside the age range of 15-65 years.
2. Patients requiring surgery at any stage during admission.
3. High-risk patients.
4. Patients with a known history of epilepsy.
5. Patients with a prior history of head trauma.
6. Pregnant patients.
7. Patients with a previous history of neurosurgical procedures.

By applying these inclusion and exclusion criteria, the study aimed to ensure a specific patient population for analysis and observation.

Data Collection

Medical history of patients was identified to gather the relevant data for the study. Information such as origin of lesion (road incidence), gender, age, Glasgow Coma Rate, findings of computed tomography, initial seizure, Antiepileptic drug, period of the drug utilization, and follow-up procedure in the last 12 months were reported by the scholar.

It is important to note that 12 patients were lost to follow-up, meaning their data could not be obtained for the complete 12-month period. Additionally, 15 patients in the study unfortunately expired during the course of the study.

These factors should be taken into consideration when analyzing the results and drawing conclusions, as the incomplete follow-up and patient mortality may impact the overall findings of the study.

Data Analysis

The data collected for the study was entered into a statistical software program, specifically SPSS Version 24, for analysis. Quantitative data, such as age, were presented as mean ± standard deviation (S.D). Categorical data, such as gender and the presence of post-traumatic

epilepsy (PTE), were presented as frequencies and percentages (%).

To establish statistical significance in samples, a p-valuethat is Less than 0. 05 was considered significant. This value is set so that when it crosses that mark, it can be assured that any statistically significant correlations among the variables are not just sporadic deviations from the norm.

The data was divided into groups according to age, gender, and GCS score. Stratification is the process of dividing the data into separate groups using some particular characteristics or variables to focus on. This permits one to work closely with a population and help identify any disease patterns or symptoms that are unique to each subgroup.

In order to do that, stratification of data in PTE incidence, both by age, gender, and Glasgow coma scale, was strived for and expected to uncover any specific pattern within these categories that might help in understanding how severity of this disease depends on one's age, gender and severity of consciousness disturbance.

RESULTS

The mean age of the participants was 40 years. Out of the 90 patients included, 67 were male and 23 were female.

In terms of clinical presentation, 40% of the patients had mild traumatic brain injury (TBI), 35% had moderate TBI, and 20% had severe TBI. The most common etiology was road traffic accidents (RTA), followed by falls from height. Among RTAs, the most common mechanism of injury was bike versus bike.

Loss of consciousness and vomiting were the most common symptoms reported by the patients. On CT brain scans, frontal contusions were the most frequently observed (26%), followed by parietal contusions (13%) and temporal contusions (17%). Around 6% of the contusions were associated with fractures, and 14% were associated with subdural hematoma and subarachnoid hemorrhage. Additionally, more than 09% of the patients had frontotemporal or parietotemporal contusions, and 15% had bilateral contusions.

22% of the patients developed early PTS, while 11% developed late PTS. It is noteworthy that early PTS occurred in 10% of the patients within 24 hours of the traumatic brain injury (TBI), while 12% developed PTS between 2-7 days after the injury. Late PTS, on the other hand, occurred after 7 days of injury. Additionally, 9% of the patients developed late PTS without experiencing any early PTS.

Regarding the use of AEDs, 6% of the patients with early PTS used AEDs for at least three months during the follow-up period, while 7% of the patients with late PTS used AEDs. The most frequently used AED was Epival (valproic acid) with 18% of patients with PTS, followed by levetiracetam at 4%, and phenytoin at 3%. It is also worth mentioning that 48% of the patients received prophylactic AEDs for at least 7 days, but 5% of them still developed PTS despite the use of prophylactic AEDs.

These findings highlight the incidence and timing of PTS in relation to TBI, as well as the use of AEDs in the study population. The data on AED usage provides insights into the prescription practices and the effectiveness of prophylactic AEDs in preventing seizures in patients with TB.

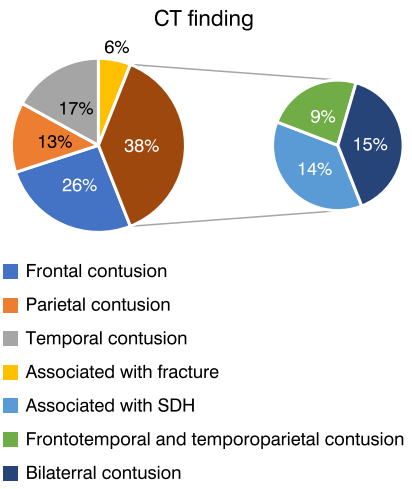

Figure-1. CT Scan brain finding

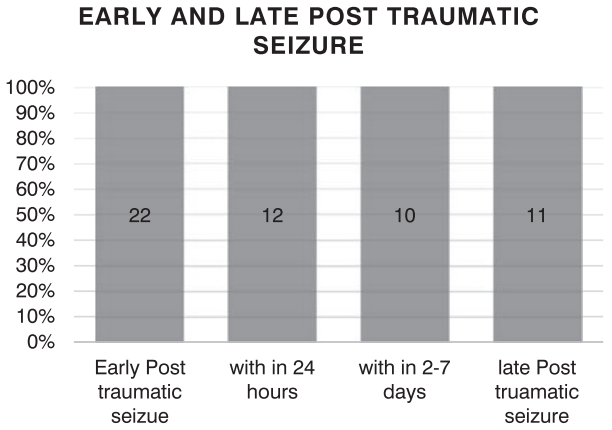

Figure-1. Early and late PTS (Post traumatic seizure)

DISCUSSION

TBI is an important health issue among the people, contributing to almost 50, 000 deaths eventually, and about 1.7 million emergency section within the America.[10] Brain injury, a type of head lesions, involve focal regions of necrosis and hemorrhage, typically affecting the subcortical white region and cerebral cortex.[11] They are proportionally ordinary, present in eight percent case of Traumatic Brain Injury and within 13% to thirty five percent of extreme level of lesions. Within the current study, the prevalence of brain lesions over a 6 months period was determined to be 9.7%.

The mortality rates for patients without cerebral contusions and those with cerebral contusions are reported to be 3.9% and 21.8%, respectively. In the current study, the incidence of mortality was found to be 15%.[12]

Post-traumatic epilepsy (PTE) is a significant and poorly understood consequence of TBI. It is characterized by recurrent, unprovoked seizures that occur after 7 days of head injury.[13] PTE is an acquired form of epilepsy that can result from various mechanisms, such as excitotoxicity from glutamate release, free radicals release, excessive inflammation, or disruption of the blood-brain barrier in individuals with the ApoE-E4 allele. The frontal and temporal lobes are the most commonly affected in PTE, although in the current study, the affected lobes were found to be frontal (25%), followed by parietal and temporal lobes.[2]

These findings contribute to our understanding of the incidence of cerebral contusions and mortality rates in patients with TBI.[14] Additionally, they highlight the importance of studying and comprehending the mechanisms and patterns of PTE to improve diagnosis, management, and prevention strategies for this challenging condition.

In respect to the civilian studies incidence rates for early post-traumatic seizures (PTS) vary from 4% to 25% and incidence rates for the late PTS vary between 9% and 42%. The risk of post-traumatic epilepsy (PTE) after serious traumatic brain injury (TBI) has been reported to be 7. 1% after 1 year and 11%. No cognitive impairment is observed while delayed cognitive deterioration needs up to 5% percent of persons at 5 years after the occurrence of moderate TBI (traumatic brain injury). The data shows that about 7% of pregnancies turn out to be delivery with cesarean section during the first year, and for the one-year follow-up, the number goes up to 11%. 6% at 5 years.[15]

The occurrence of PTS at the onset and the late appearing PTS type in the current article are in line with findings of other studies. Nevertheless, at 1 year, perceived occurrence of PTE is 2% in moderate and mild TBI studies, which is lower than other studies have shown. However, it was found that more than 46% of patients were treated with preventive AEDs, but only 2.9% of them went into prophylaxis of PTE. Inappropriate utilization of anti-epileptic drugs is a big problem that leads to increased cases of drug resistance and epidemic burden for poor patients in the developing world. The overuse of AEDs is more common in the outer areas due to the poor outpatient follow-up visits.[16]

Study results show that patients with both early and late PTS are the only ones needing 3% AED treatment for a minimum period of 6 months.[11] On the other hand, though 44% of population were using AEDs as a subsidiary method, it is still worth the use of the original healthcare facilities.

It is also worth noting that in many TBI centers, AEDs is started prophylactically without following established guidelines and once started, it is quite often avoided the discontinuation of such treatment due to many reasons like lack of in-depth knowledge, personal preferences, fear of follow-up monitoring, and non-multi-disciplinary management.[14,17]

Phenytoin is commonly used for prophylaxis to prevent early PTS, and it also reduces the incidence of late PTS. Levetiracetam and carbamazepine are also commonly used. However, in this study, the most commonly used drugs were Epival (valproic acid), followed by levetiracetam and phenytoin, which goes against international study protocols.[18]

Taking AEDs is not just a matter of taking a pill but involves a lifestyle-modifying process that requires extensive patient education, long-term use, financial costs, repeated laboratory investigations for monitoring, consideration of drug interactions, facing social stigmas, strict follow-up, and strict compliance.

These findings highlight the need for adherence to international guidelines in prescribing AEDs, as well as the importance of patient education and comprehensive multidisciplinary management in optimizing the use of AEDs in TBI patients

CONCLUSION

Implementation of national guidelines is essential to promote uniformity in the management of TBI and PTE across different healthcare settings. It helps healthcare providers make informed decisions based on best practices, leading to improved patient outcomes and reduced risks associated with non-judicious use of AEDs.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Muhammad Nasir	Study design and Methodology.	
2	Zainab Bibi	Paper writing, references and data collection.	
3	Sohail Amir	Final proof reading, and critical analysis.	
4	Pirtufail	Data collection and calculation.	
5	Fayyaz Ahmad	Analysis of data and interpretation of results.	
6	Aurangzeb	Literature review and manuscript writing.	