Research Article

Traumatic vein of Labbe hemorrhagic infarction—clinical profile and outcome analysis

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Abstract

Background: Of the various neurosurgical entities, traumatic vein of Labbe hemorrhagic infarction is unique and requires exceptional care as it drains into the eloquent area and shows higher affinity for early uncal herniation.

Objective: To study the clinical profile and outcome analysis of traumatic vein of Labbe hemorrhagic infarction.

Materials and Methods: We analyzed 26 cases admitted in our department between 2012 and 2015 and studied the clinical profile and carried out an outcome analysis of the same.

Result: The presence of associated injuries was seen in 77% of cases and contracoup injury in 31% of them. Most of the patients were managed conservatively (57%). Surgical intervention was required in 43% of cases, with overall mortality of 12%. Hemiparesis and opercular syndrome were the most common deficits seen in the patients (11%).

Conclusion: Traumatic vein of Labbe hemorrhagic infarction in an important neurosurgical emergency. Maintaining a high index of suspicion and following-up of patients showing hyperdensity in the transverse sinus region is, thus, imperative. Cerebral venous thrombosis that is left untreated might result in hemorrhagic infarction and death.

KEY WORDS: Trauma, vein of Labbe, outcome

Introduction

Dural venous sinus thrombosis (DVST) after blunt head trauma has been reported in a few case series.[1–6] Limited studies have been carried out on the outcomes that occur after traumatic vein of Labbe hemorrhagic infarction.[7] It is an important neurosurgical entity because of the eloquent territory it drains, higher affinity for causing early uncal herniation, and sometimes fatal outcome.[8–10] So, a strict observation of the patients and, if required, early surgical evacuation are the significant factors in the management of the same. This condition is identified by the differential diagnosis of the traumatic temporal artery damage where the damage to the medial temporal region including the insular territory is also observed. Another entity to be excluded is the transverse sinus thrombosis.

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Materials and Methods

We included 26 cases admitted in the Department of Neurosurgery with the diagnosis of traumatic vein of Labbe hemorrhagic infarction from January 2013 to 2015. All patients with traumatic temporal lobe lesions were included in the study. The demographic data of patients, initial Glasgow coma scale (GCS) sore, associated findings, and other systemic injuries were also included. Patients presenting with low GCS and anisocoria and computed tomography (CT) image showing significant lesions with evidence of uncal herniation [Figure 1] were immediately taken up for surgical evacuation [Figure 2]. Patients with traumatic transverse sinus thrombosis were evaluated for possible evolution in the hemorrhagic infarction. Glasgow outcome score (GOS) of the patients at discharge were recorded. Magnetic resonance (MR) venography [Figure 3] was advised in all the cases, especially in those managed conservatively to confirm the diagnosis. Informed consent was taken in all the cases, and the clearance for the

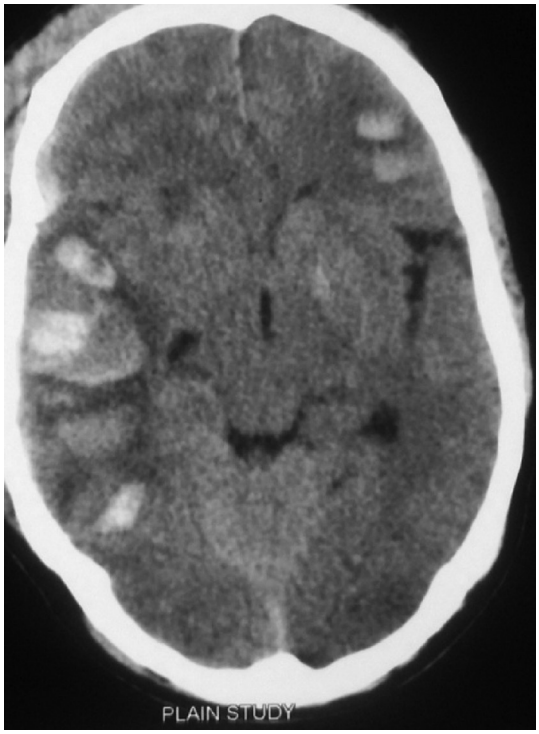

Figure 1: CT image showing significant lesion with evidence of uncal herniation.

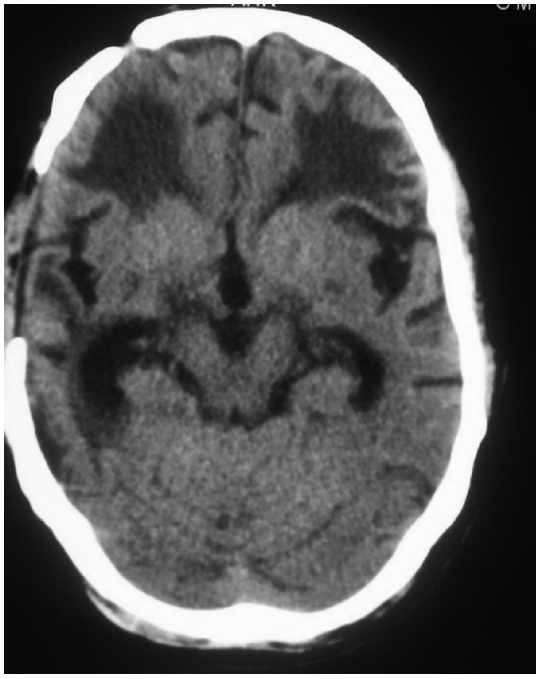

Figure 2: Post operative CT image of the patient during his follow up.

Figure 3: MR venography showing absence of vein of labbe on the right side.

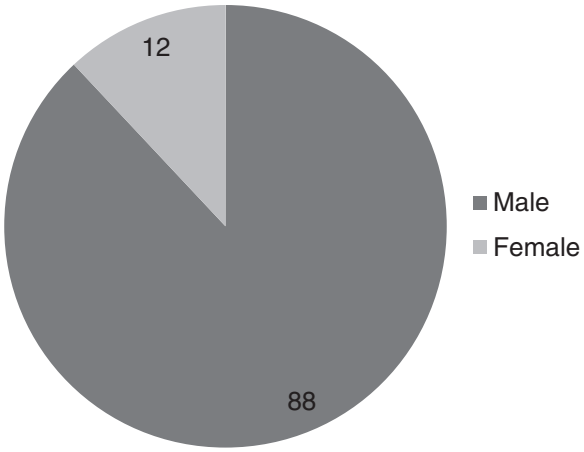

Figure 4: Male:female ratio (in %).

study was taken from the hospital ethical clearance committee. The analysis of the study was formulated using the SPSS software, version 20.

Result

The male:female ratio was 7.66:1 [Figure 4]. The age range of the patients was from 5 to 78 years.

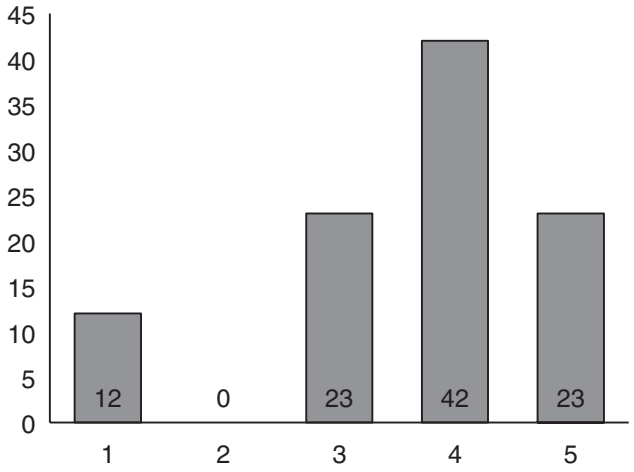

Figure 5: GOS at three months (in %).

Table 1: Outcome analysis of the cases

Parameters	Frequency	%
GCS		
Mild	12	46
Moderate	6	23
Severe	8	31
Sex		
Male	23	88
Female	3	12
Site		
Left	15	58
Right	10	38
Bilateral	1	4
Contracoup injury		
Yes	8	31
No	18	69
Associated injury		
Yes	20	77
No	6	23
Management		
Conservative	15	57
Craniotomy	9	34
Drakes	2	9
GOS		
5	6	23
4	11	42
3	6	23
1	3	12
Neurological deficits		
Nil	17	65
Hemiparesis	3	11
Opercular syndrome	3	11
Length of stay (days)		
Minimum	2	
Maximum	52	
Age (years)		
Minimum	5	
Maximum	78	

- **Laterality of injury**
  The left side was involved in 58% of the cases, while the right side was involved in 38% of the cases. Bilateral involvement was seen in one case. Associated injuries were seen in 77% of the cases.
- **Severity of injury**
  Most of the patients presented with mild head injury (46%), whereas moderate and severe head injuries were seen in 23% and 31% of cases, respectively.
- **Mode of management**
  Most of the patients were managed conservatively (57%). Craniotomy was performed in 34% of cases and Drake's craniactomy in 9% of them.
- **Outcome of patients**
  About 42% of the patient revealed a GOS of four at 3 months [Figure 5] and 23% attained a GOS of five. The overall mortality in the series was 12%.
- **Neurological deficits**
  About 65% of the patients attained full recovery. Hemiparesis was seen in 11% of the patients, and opercular syndrome was seen in 11% of them [Table 1].

Discussion

Eponymously named after the French surgeon Charles Labbe, the vein of Labbe (inferior anastomotic vein) crosses the temporal lobe between the Sylvian fissure and the transverse sinus and connects the superficial middle cerebral vein and the transverse sinus.

Because there is a higher affinity for early uncal herniation and rapid neurological deterioration, any traumatic temporal lobe lesion imposes an enigma to every neurosurgeon.

Impact injury and counterblow are the main reasons to the injury of Labbe vein, which consequently leads to serious traumatic cerebral infarction and bad prognosis.[7] Temporal bone fracture was associated in 15 of all the 16 cases in the study done by Long et al.[7] when compared with the results of 20 of 26 patients in our study.

In a study by Giannetti,[11] CT scan findings such as mediolateral diameter of the lesion, location of the hematoma, status of the ambient cisterns, and position of the midline structures were used as the criteria to decide which patients benefit from early surgery. The mean volume of the lesion in the patients undergoing operation was 25 mL. The mortality among the patients who were operated on was 50% and, among those who were managed conservatively, 22.7% compared with 12% in our study. In a study by Long et al.,[7] five of 16 patients ended up in a vegetative state.

Multidetector CT venography of patients with blunt head trauma revealing skull fractures that stretch out to a dural venous sinus or jugular bulb identified DVST in 40.7% of cases, and of these, 55% were occlusive.[12] There is a high risk of evolution of the vein of Labbe hemorrhagic infarction in the subsets of patients with petrous bone fracture. So, proper monitoring is justified for any signs and symptoms of increased intracranial pressure.

Moreover, given the eloquent nature of the brain that vein of Labbe drains, there is a need for a long-term follow-up of these patients in determining the neurological sequel of these patients, especially in terms of memory.[13]

The strength of our study is the focus on one of the important aspects of neurotrauma, wherein critical management is upmost for a better management of the patients with traumatic head injury. The limitations include small volume of patients and the inability to perform MR venography in all the patients with severe traumatic brain injury in all trauma centers to correctly diagnose the entity.

Conclusion

A high index of suspicion needs to be taken in patients with petrous bone fracture for probable vein of Labbe hemorrhagic infarction following transverse sinus thrombosis. In those with traumatic venous infarction, stringent monitoring needs to be taken for evidence of early uncal herniation. In the case of lesions more than 25 mL, anisocoria, uncal herniation, and asymmetric ambient cisterns, early surgical evacuation is justified.

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