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A Dilemma to Observe or Operate a Traumatic Cerebrospinal Fluid Leak: A Case Report

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Abstract: ***A Cerebrospinal fluid (CSF) leak can be spontaneous or secondary to trauma, surgery, tumours and other disorders. It can lead to many complications like meningitis which can be fatal or can leave patient with neurological deficits. Here, we report a case of a 26 year old patient who presented with watery ear discharge and decreased hearing from left ear which was preceded by a road side traffic accident. A thorough clinical history was obtained and clinical examination was done which suggested the possibility of ear discharge to be CSF. Biochemical analysis proved the fliud to be CSF. On radiological investigation, no defect was found so the patient was managed conservatively using intravenous antibiotics, nasal and oral decongestants and precautions to refrain from straining. Patient was followed up till 10 months and reported no symptoms and signs of complications. Patient's ear discharge was relieved at 3rd day of treatment and hearing was improved at monthly follow-up and had a good prognosis with no complications.***

Keywords: Traumatic, meningitis, CSF leak, ENT disease

1. Introduction

A cerebrospinal fluid (CSF) leak results from a direct connection between the subarachnoid area, which houses CSF, and the middle ear cavity, nasal cavity, or nasal sinuses. The loss of structure of meninges following severe craniomaxillofacial trauma may result in CSF leak from the subarachnoid area.[1-3] Secondary and spontaneous CSF leaks are both possible. Secondary CSF leaks are caused mostly by tumours, surgery, inflammation, trauma, and other disorders.[1] Post-traumatic CSF leaks have been seen. Adult patients with closed traumatic brain injuries account for 1% to 3% of all cases, while head traumas account for 80% to 90% of all causes of CSF leakage.[4, 5] More emphasis should be focused on the importance of medical history and imaging in the diagnosis of this condition.

2. Case Report

A 26-year-old male presented with a three-day history of watery, non-foul-smelling ear discharge from his left ear. He had a history of falling off a motorbike 5 days earlier, resulting in injury to his left ear, a bleed from the left ear, and hearing loss. There had been no previous reports of confusion, nausea, vomiting, dizziness, or unusual bodily movements on the day of accident or in last 5 days.

On physical examination, there was presence of bluish discoloration in the retroauricular region (Battle sign). (Picture 1)

Otoscopy revealed a watery discharge in the antero-superior quadrant of the tympanic membrane which on biochemical analysis and on being tested for beta 2 transferrin turned out to be CSF.

On radiological evaluation of head and bilateral temporal bone, no abnormality was seen. With air conduction thresholds of 83.33 dB, audiometry revealed a conductive hearing loss in the left ear.

Picture 1: Bluish discoloration in the retroauricular region (Battle sign)

Because the facial nerve remained intact, the patient was treated conservatively, with preventative intravenous antibiotics and nasal and oral decongestants. The patient was advised to keep his ear dry and to refrain from straining (no forceful blowing of nose, straining while stools, deliberate coughing, sneezing, lifting weight).

On monthly follow-up, the patient was relieved of ear discharge and his hearing thresholds for air conduction improved from 83.33 dB to 40.22 dB. Patient did not complain of headache, neck rigidity or confusion in the follow-up period. Patient has been followed up till 10 months with no complaints.

3. Discussion

Meningitis from a traumatic CSF leak can cause significant morbidity and even death, depending on the cause as well as the location of the CSF leak. Aside from cases of

spontaneous illnesses, traumatic CSF leak might be potentially harmful with numerous sequelae such as bacterial meningitis if not treated on its own.[6] In our patient, there were no complaints which suggested meningitis in the follow-up period as the prophylactic treatment for meningitis was started immediately at time of presentation. On radiological evaluation, no defect was visualized so we went for condervative treatment. If a confirmed injury is suspected, standard therapy includes intravenous antibiotics in addition to the primary surgical repair of the dural defect. Thus, early diagnosis of CSF leaks is critical because it influences the patient's outcome. The decision to observe or surgically repair is most likely to be influenced by the source, size of the defect, location and timing of the leak.[7, 8]

4. Conclusion

A post-traumatic CSF leak can be fatal if not diagnosed early and not treated at the earliest. They are rare and generally heal spontaneously. It is very important to go for thorough history, clinical examination and radiological investigation in CSF leak patients as the decision to observe or repair is critical to prevent complications and patient's prognosis.

References

[1] Savva A, Taylor MJ, Beatty CW. Management of cerebrospinal fluid leaks involving the temporal bone: Report on 92 patients. Laryngoscope. 2003;113(1):50-56.
[2] Tilak AM, Koehn H, Mattos J, Payne SC. Preoperative management of spontaneous cerebrospinal fluid rhinorrhea with acetazolamide. Int Forum Allergy Rhinol. 2019;9(3):265-269.
[3] Thomeer HG, Schreurs C, van Doormaal TP, Straatman LV. Management and outcomes of spontaneous cerebrospinal fluid otorrhoea. Front Surg. 2020;7:21.
[4] Schlosser RJ, Bolger WE. Nasal cerebrospinal fluid leaks: critical review and surgical considerations. Laryngoscope. 2004;114:255–265.
[5] Yilmazlar S, Arslan E, Kocaeli H, Dogan S, Aksoy K, Korfali E, et al. Cerebrospinal fluid leakage complicating skull base fractures: analysis of 81 cases. Neurosurg Rev. 2006;29:64–71.
[6] Kaufman BA, Tunkel AR, Pryor JC, Dacey RG., Jr Meningitis in the neurosurgical patient. Infect Dis Clin North Am. 1990;4:677–701.
[7] Bell RB, Dierks EJ, Homer L, Potter BE. Management of cerebrospinal fluid leak associated with craniomaxillofacial trauma. J Oral Maxillofac Surg. 2004;62:676–684.
[8] Jones NS, Becker DG. Advances in the management of CSF leaks. BMJ. 2001;322:122–123.