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Original Article

Assessment of cases of CSF rhinorrhoea

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ABSTRACT:

Background: CSF rhinorrhoea is secondary to head trauma with an associated skull base fracture. The present study was conducted to assess cases of CSF rhinorrhoea.

Materials & Methods: 86 cases of CSF rhinorrhea of both genders were recorded. Clinical features, site, causes of leak and management was recorded. Management given to patients was also recorded.

Results: Out of 86 patients, males were 60 and females were 26. Common clinical findings were fever seen in 42%, headache in 65%, nasal discharge in 80%, meningitis in 38% and altered sensorium in 57%. Common site of CSF leakage was frontal sinus in 22%, sphenoid sinus in 10%, ethmoid sinus in 7%, cribiform plate in 45% and multiple site in 16%. The difference was significant (P< 0.05).

Conclusion: Common clinical findings were fever, headache, nasal discharge, meningitis and altered sensorium.

Key words: Cerebrospinal fluid, Ethmoid sinus, Rhinorrhoea

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INTRODUCTION

Cerebrospinal fluid (CSF) leak occurs due to abnormal communication between the subarachnoid space and a pneumatized area in the skull base that includes the sinonasal tract.[1] This communication or fistula must involve a breech of the arachnoid and dura matter, the bone of skull base, and the underlying mucosa. The surgical techniques differ based on the site of the defect.[2] For defects involving the medial cribriform plate the defect was approached without sacrificing the middle turbinate and defects of lateral cribriform plate required the removal of middle turbinate and anterior and posterior ethmoidectomy and frontal sinus surgery.[3]

Usually, CSF rhinorrhoea is secondary to head trauma with an associated skull base fracture. Most of the traumatic leak stops with conservative management. Only 3–4 % of leaks are spontaneous. The majority occurs in adults in the fourth decade of life, with females out numbering males (2:1).[4] Others conditions include paranasal sinuses along with osteomyelitis of the adjacent bone, congenital anomalies of the brain and its coverings such as meningoceles or meningoencephaloceles, and destruction lesions along the skull base. Pituitary tumors cause erosion of the sella turcica floor and are frequently associated with CSF rhinorrhea.[5]

Diagnosis is made by clinical, biochemical and radiological examination. Detection of β-2-transferrin in watery nasal discharge is diagnostic of CSF. CT cisternography is the gold standard for diagnosis of CSF rhinorrhoea. Intrathecal sodium fluorescein can also be used to localize the site of the defect intra-operatively. Alternatively, plain CT with MR cisternography can be also performed.[6] The present study was conducted to assess cases of CSF rhinorrhoea.

MATERIALS & METHODS

The present study comprised of 86 cases of CSF rhinorrhea of both genders. All parents were informed regarding the study and written consent was obtained. Demographic data such as name, age, gender etc. was recorded. A thorough examination was performed in all patients. Clinical features, site, causes of leak and management was recorded. Management given to patients was also recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 86		
Gender	**Males**	**Females**
Number	60	26

Table I shows that out of 86 patients, males were 60 and females were 26.

Table II Assessment of clinical findings in patients

Clinical findings	Percentage	P value
Fever	42%	0.025
Headache	65%	
Nasal discharge	80%	
Meningitis	38%	
Altered sensorium	57%	

Table II, graph I shows that common clinical findings were fever seen in 42%, headache in 65%, nasal discharge in 80%, meningitis in 38% and altered sensorium in 57%. The difference was significant (P< 0.05).

Graph I Assessment of clinical findings in patients

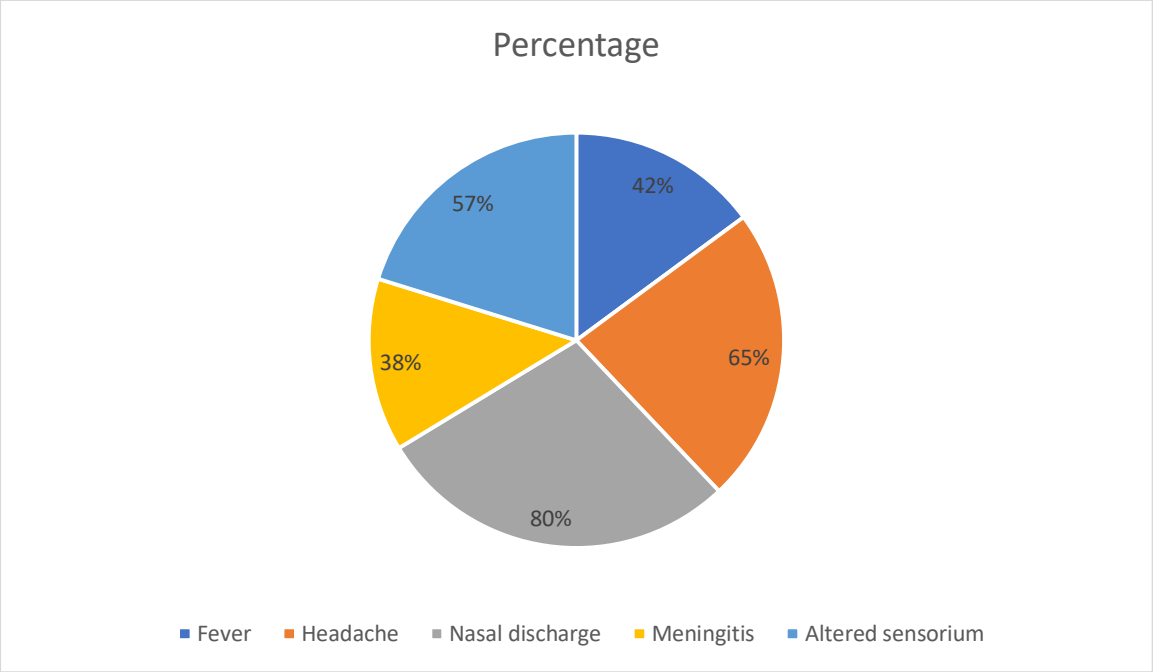
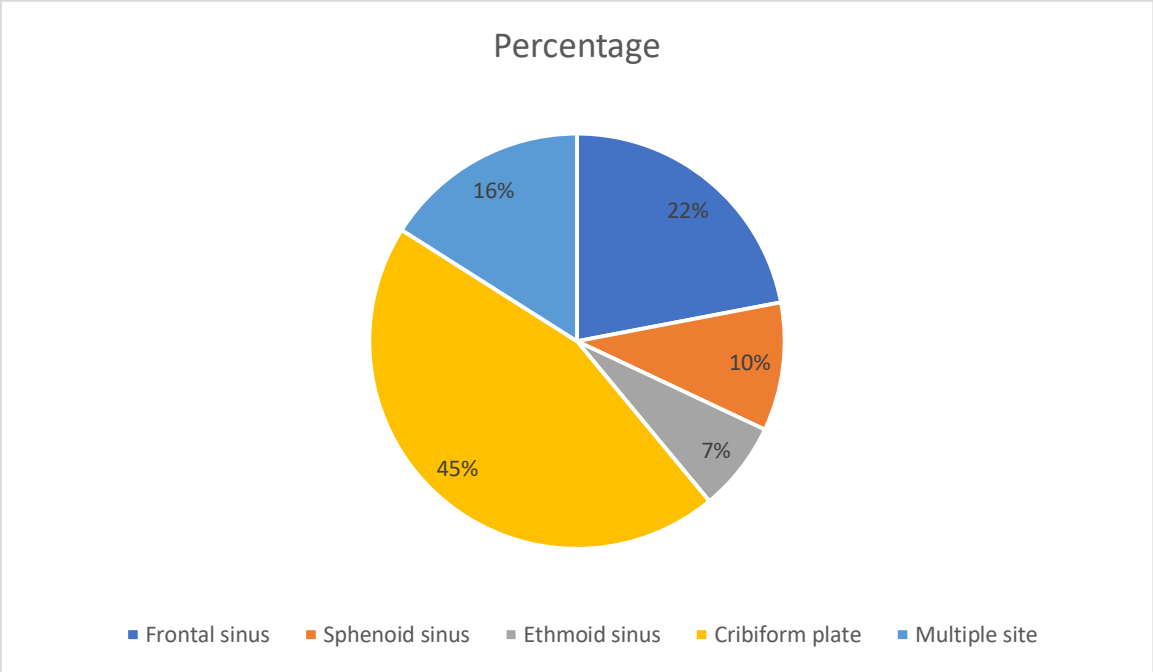


Table III Assessment of site of leakage

Site	Percentage	P value
Frontal sinus	22%	0.02
Sphenoid sinus	10%	
Ethmoid sinus	7%	
Cribiform plate	45%	
Multiple site	16%	

Table III, graph II shows that common site of CSF leakage was frontal sinus in 22%, sphenoid sinus in 10%, ethmoid sinus in 7%, cribiform plate in 45% and multiple site in 16%. The difference was significant (P< 0.05).

Graph II Assessment of site of leakage



DISCUSSION

CSF rhinorrhea can be divided in traumatic and non-traumatic: the traumatic group can be divided in accidental and iatrogenic.[7] The non-traumatic group is associated to brain tumors (intracranial and extracranial tumors, cholesteatoma, or tuberculoma are know to erode the bone directly), skull base congenital defects and meningoceles or meningoencephalocles. CSF leak most commonly occurs following trauma (80-90 % of cases) and the majority of cases presenting within the first three months.[8] Other etiologies include: postoperative defect (10 %), spontaneous leak (3-4 %), tumor, and inflammation. Usually the fracture involves some portion of the anterior cranial fossa floor with the leaks occurring through the cribriform plate or ethmoid sinus roof into the nose.[9] Another frequently seen anterior fossa fracture site is the posterior wall of the frontal sinus through which CSF can escape into the nose via the nasofrontal duct. Less common are middle cranial fossa fractures that can cause leakage to the nose via the sphenoid sinus or eustachian tube. Nontraumatic cerebrospinal fluid fistulae tend to occur less frequently, and most of them are related to diseases that cause increased intracranial pressure or local skull destruction.[10] The present study was conducted to assess cases of CSF rhinorrhoea.

In present study, out of 86 patients, males were 60 and females were 26. We found that common clinical findings were fever seen in 42%, headache in 65%, nasal discharge in 80%, meningitis in 38% and altered sensorium in 57%. Araujo et al[11] in their study found that the main cause of CSF leak was spontaneous in 55, trauma in 24, iatrogenic in 16 and congenital in 9 cases. Common site of CSF leakage was cribriform plate in 42, sphenoid sinus in 30, frontal sinus in 3, ethmoid sinus in 11 and multiple sites in 18 cases. The difference was significant (P< 0.05). Clinical presentation was nasal discharge in 85 cases, meningitis in 12, headache in 20, fever in 34, altered sensorium in 5 and hemocephalus in 6 cases.

We observed that common site of CSF leakage was frontal sinus in 22%, sphenoid sinus in 10%, ethmoid sinus in 7%, cribiform plate in 45% and multiple site in 16%. Abuabara et al[12] found that CSF leak most commonly occurs following trauma and the majority of cases presenting within the first three months. CSF rhinorrhoea have significantly greater incidence of periorbital haematoma. This suggests that patients with head injuries and features of periorbital haematoma are at greater risk of unobserved dural tear and delayed CSF leakage. In the presence of a skull base fracture on computed tomography and a clinical CSF leak, there is no need for a further confirmatory test. In cases where a confirmatory test is needed, the beta-2 transferrin assay is the test of choice because of its high sensitivity and specificity. A greater proportion of the CSF leaks in the patients resolved spontaneously. CSF fistulae persisting for > 7 days had a significantly increased risk of developing meningitis. Treatment decisions should be dictated by the severity of neurological decline during the emergency period and the presence/absence of associated intracranial lesions. The timing for surgery and CSF drainage procedures must be decided with great care and with a clear strategy.

CONCLUSION

Author found that common clinical findings were fever, headache, nasal discharge, meningitis and altered sensorium.

REFERENCES

1. Dodson EE, Gross CW, Swerdloff JL et al. Transnasal endoscopic repair of cerebrospinal fluid rhinorrhea and skull base defects: a review of 21 cases. Otorhinolaryngol Head Neck Surg 1994; 111:600–605.
2. Lanza DC, O'Brien DA, Kennedy DW. Endoscopic repair of cerebrospinal fluid fistulae and encephaloceles. Laryngoscope 1996; 106:1119–1125.
3. Burns JA, Dodson EE, Gross CW. Transnasal endoscopic repair of craniofacial fistulae: a refined technique with long term follow up. Laryngoscope 1996; 106:1080–1083.
4. Gjuric M, Goede U, Keimer H, Wigand ME. Endonasal endoscopic closure of cerebrospinal fluid fistulas at the anterior cranial base. Ann Otol Rhinol Laryngol 1996; 105:620–623.
5. Vrabec DP, Hallberg OE. Cerebrospinal fluid rhinorrhoea by endonasal surgery. Arch Otolaryngol 1964; 80: 218-29.
6. Nachtigal D, Frenkiel S, Mohr G. Endoscopic repair of cerebrospinal fluid rhinorrhea: Is it the treatment of choice. The journal of Otolaryngology 1999; 28 (3): 129-33.
7. Hao SP. Transnasal endoscopic repair of cerebrospinal fluid rhinorrhoea: an interposition technique. Laryngoscope 1996; 106: 501-3.
8. Choi D, Span R. Traumatic cerebralspinal fluid leakage: risks factors and the use of prophylactic antibiotics. Br J of Neurosurgery 1996; 10: 571-5.
9. Brodie HA. Prophylactic antibiotics for posttraumatic cerebrospinal fluid fistulae. A meta-analysis. Arch Otolaryngol Head Neck Surg 1997;123:749-52.
1. 1028. Bell RB, Dierks EJ, Homer L, Potter BE. Management of cerebrospinal fluid leak associated with craniomaxillofacial trauma. J Oral Maxillofac Surg 2004;62:676-84.
10. Araujo Filho BC, Butugan O, de Melo Pádua FG, Voegels RL. Endoscopic repair of CSF rhinorrhea: experience of 44 cases. Brazilian journal of otorhinolaryngology. 2005;71(4):472-6.
11. Abuabara A. Cerebrospinal fluid rhinorrhoea: diagnosis and management. Medicina Oral, Patología Oral y Cirugía Bucal (Internet). 2007 Sep;12(5):397-400.