ORIGINAL RESEARCH

Evaluation of patients of CSF rhinorrhoea

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ABSTRACT
Background: Cerebrospinal fluid (CSF) rhinorrhoea is the leakage of cerebrospinal fluid from the subarachnoid space into the nasal cavity. The present study was conducted to assess cases of CSF rhinorrhoea. **Materials & Methods:** 72 cases of CSF rhinorrhea of both genders were screened. All of the patients underwent a comprehensive checkup. Clinical characteristics, location, leak reasons, and management were noted. The care these patients received was also documented. **Results:** Out of 72 patients, males were 40 and females were 32.Common clinical findings were fever, headache, nasal discharge, meningitis and altered sensorium. Common site of CSF leakage was frontal sinus in 20%, sphenoid sinus in 12%, ethmoid sinus in 8%, cribiform plate in 425% and multiple site in 18%. Common clinical findings were fever seen in 48%, headache in 62%, nasal discharge in 87%, meningitis in 32% and altered sensorium in 51%. The difference was significant (P< 0.05). **Conclusion:** Fever, headaches, nasal discharge, meningitis, and altered sensorium were typical clinical findings.
Key words: Cerebrospinal fluid, Rhinorrhoea, fever

INTRODUCTION

Cerebrospinal fluid (CSF) rhinorrhoea is the leakage of cerebrospinal fluid from the subarachnoid space into the nasal cavity. This condition can occur due to a defect in the skull base, which allows the CSF to escape.There are two types of CSF rhinorrhea: traumatic and non-traumatic.[1] Within the traumatic group, there are two subgroups: iatrogenic and accidental. The non-traumatic category is linked to congenital malformations of the skull base, meningoceles or meningoencephalocles, brain cancers (both intracranial and extracranial tumors, cholesteatoma, or tuberculoma are known to erode the bone directly). Eighty to ninety percent of cases of CSF leaks occur after trauma, and most cases show symptoms within the first three months.[2]

Additional causes include inflammation, tumors, spontaneous leaks (3–4%), and surgical defects (10%). The anterior cranial fossa floor is typically partially broken, and leaks enter the nose through the cribriform plate or ethmoid sinus roof. The posterior wall of the frontal sinus, through which CSF can exit into the nose through the nasofrontal duct, is another commonly observed anterior fossa fracture site.[3] Less frequently occurring fractures of the middle cranial fossa might result in leaking to the nose through the eustachian tube or sphenoid sinus. CSF rhinorrhea typically results from head trauma that also involves a fractured skull base. Conservative management effectively halts the majority of the painful leak. Just 4% to 5% of leaks occur on their own.[4,5] The majority happens in adults during their fourth decade of life, with a 2:1 ratio between males and girls. Other problems include congenital abnormalities of the brain and its coverings, such as meningoceles or meningoencephaloceles, destructive lesions along the base of the skull, and paranasal sinuses in conjunction with osteomyelitis of the neighboring bone. Pituitary tumors are often linked to CSF rhinorrhea and induce erosion of the sella turcica floor.[6]The present study was conducted to assess cases of CSF rhinorrhoea.

MATERIALS & METHODS

The present study comprised of 72 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. All of the patients underwent a comprehensive checkup. Clinical characteristics, location, leak reasons, and management were noted. The care these patients received was also documented. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 72		
Gender	**Males**	**Females**
Number	40	32

Table I shows that out of 72 patients, males were 40 and females were 32.

Table II Assessment of parameters

Parameters	Variables	Percentage	P value
Site of leakage	Frontal sinus	20%	0.01
	Sphenoid sinus	12%	
	Ethmoid sinus	8%	
	Cribiform plate	42%	
	Multiple site	18%	
Clinical findings	Fever	48%	0.02
	Headache	62%	
	Nasal discharge	87%	
	Meningitis	32%	
	Altered sensorium	51%	

Table II shows that common site of CSF leakage was frontal sinus in 20%, sphenoid sinus in 12%, ethmoid sinus in 8%, cribiform platein 425% and multiple site in 18%. Commonclinical findings were fever seen in 48%, headache in 62%, nasal discharge in 87%, meningitis in 32% and altered sensorium in 51%. The difference was significant (P< 0.05).

DISCUSSION

A pneumatized region in the base of the skull that contains the sinonasal tract and the subarachnoid space can communicate abnormally, leading to a leak of cerebrospinal fluid (CSF). The underlying mucosa, the base of the skull bone, and the arachnoid and dura tissue must all be breached in this connection, or fistula.[7] The surgical methods vary according on the defect's location.[8] Defects of the lateral cribriform plate necessitated the removal of the middle turbinate as well as anterior and posterior ethmoidectomy and frontal sinus surgery. Defects involving the medial cribriform plate were approached without sacrificing the middle turbinate.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. Diagnosis is made by clinical, biochemical and radiological examination.[9] 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.[10]The present study was conducted to assess cases of CSF rhinorrhoea.

We found thatout of 72 patients, males were 40 and females were 32.According to Abuabara et al[11], most cases of CSF leak manifest within the first three months of injury. The leakage usually happens after trauma. Periorbital hemorrhage is much more common in cases of CSF rhinorrhea. This implies that patients who have had head trauma and exhibit periorbital hemorrhage characteristics are more likely to experience delayed CSF leakage and an undetected dural tear. There is no need for a second confirmatory test if there is a clinical CSF leak and a skull base fracture visible on computed tomography. Because of its great sensitivity and specificity, the beta-2 transferrin assay is the test of choice when a confirmatory test is required. A higher percentage of the patients' CSF leaks resolved on their own. For more than seven days, CSF fistulae had asignificantly 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.

We observed that common site of CSF leakage was frontal sinus in 20%, sphenoid sinus in 12%, ethmoid sinus in 8%, cribiform plate in 425% and multiple site in 18%. Common clinical findings were fever seen in 48%, headache in 62%, nasal discharge in 87%, meningitis in 32% and altered sensorium in 51%. According to Araujo et al.'s research[12], the primary causes of CSF leaks were congenital in 9 cases, iatrogenic in 16, traumatic in 24, and spontaneous in 55 cases. The cribriform plate was the typical location of CSF leakage in 42 instances, the sphenoid sinus in 30, the frontal sinus in 3, the ethmoid sinus in 11, and several locations in 18 cases. There was a substantial difference (P<0.05). In 85 cases, the clinical manifestation was nasal discharge; in 12, meningitis; in 20, headache; in 34, fever; in 5, altered sensorium; and in 6 cases, hemocephalus.

CONCLUSION

Authors found that fever, headaches, nasal discharge, meningitis, and altered sensorium were typical clinical findings.

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