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CSF RHINORRHEA -A Rare Disease
Case Report

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Abstract

CSF rhinorrhea isa rare disorder. We report on 34 -year-old woman who had CSF rhinorrhea. It is a disorder that occurs when the fluid that surrounds the brain leaks into the nose and sinuses.Ahole in the membranes that retain this fluid can be caused by head trauma, surgery or even congenital defects.The liquid that leaks into your nose or ear, resulting in a runny ,watery nose .CSF rhinorrhea is quite uncommon or rare. Meningitis and pneumocephalus are two serious illnesses that can occur as a result of this disorder (air in the cranial cavity). The underlying cause of CSF flow into the nasal cavity is disruption of the barriers between the sinonasal cavity and the anterior and middle cerebral fossae.A subsequent communication with the central nervous system(CNS) can lead to cause infectious problems, causing severe morbidity and potentially devastating for longtermdeficits in the patient. The imaging method of choice for detecting a skull base defect associated with CSF rhinorrhea is high-resolution computed tomography(CT)scanning. Allow the high likelihood of spontaneogenesis,conservative treatment has been urged in cases of immediate -onset of CSF rhinorrhea follows the accidental trauma.

Water, electrolytes(Na^{+},K^{+},Mg^{+2},Ca^{+2},$Cl^{-}$and HCO^{-3}),glucose (60-80%of blood glucose),amino acids, and different proteins (22-38mg/dl)are all present in CSF.CSF is colorless,transparent,and free of cells such polymorphonuclear cells and mononuclear cells.

"Rhinorrhea" refers to a runny nose. A runny nose with brain fluid in it, however, it is not same as allergies or cold. If leaking of brain fluid observed then the following symptoms are :Fluid from nose is clear and watery, Headache, Congestion in the nose, Dizziness, Ear ringing.

An ENT specialist's diagnosis is required. They'll conduct a fluid analysis. The leak can then be found using CT scans.

KEY WORDS: CSF rhinorrhea, Sinonasal cavity, Pneumocephalus, Accidental trauma.

INTRODUCTION

CSF rhinorrhea is rare,and it is leakage of nose.Results from direct communication between subarachnoid space that surrounds the brain and nasal cavity /Paranasal sinuses.

HISTORY:

It was first reported by Willis in 1682

First repair of leak is done by Grant by bifrontal craniotomy in 1923

Wigand completed first successful endoscopic repair in 1981

Nowadays endoscopic repair of CSF leak is the mainstayof treatment

CLASSIFICATION OF CSF RHINORRHEA:

CSF leak is classified on the basis of ETIOLOGY,SIZE,LOCATION.Etiological classification is the most popular method of classification,as history elicit the cause in majority. The CSF rhinorrhea classification based on etiology. They are TRAUMATIC (More Common in>90%) and NON-TRAUMATIC (Approximately<10%of

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cases)traumatic causes are due to accidents or latrogenic, and the non-traumatic causes are due to spontaneous leak, or due to intracranial and sinonasal tumor,or congenital leak due to congenital encephalocele.

The brain and spinal cord is also known as central nervous system.it is protected by a tough leather like layer of tissue called the dura and its normally surrounded by cerebrospinal fluid which acts to cushion you during the rough and tumble of normal life. A CSF leak happens when a tear or hole forms in the dura and the CSF leaks out into the surrounding tissue this may happen due to an underlying connective tissue disorder causing a weak spot in the dura or in some cases due to a medical procedure the resultant lack of CSF causes the brain to sink to the bottom of the skull the compression on the bottom of the brain causes you to become very unwell with severe head pain symptoms may include neck pain cognitive issues and vomiting others blurred vision ,tinnitus, photophobia, facial numbness.

When CSF is lost,the previously cushioned brain sags inside the skull, resulting in a headache. Intracranial hypotension is a disorder that occurs when there is a loss of fluid within the skull.

CSF leaks can happen anywhere along the spinal column or in the brain (cranial CSF leak). CSF (cerebrospinal fluid) leaks are uncommon. They are hereto affect roughly 5 out of every 100,000 people, according to researchers. They do believe, however, that this is an underestimation and that this is an underestimation and that the total number of people affected is unknown. People in their 30s and 40s are the most likely to have them. Migraines, other headache conditions, and sinusitis are frequently misdiagnosed as CSF leak.

A cerebrospinal fluid (CSF) leak can happen to anyone. They do, however, appear more frequently in:

Women.

Certain connective tissue illnesses, such as Ehlers-Danlos and Marfan syndrome, affect people.

Obese people and those with high blood pressure.

CASE REPORT:

In September 2021,a 34-year-old woman is presented with watering from left nose and aggravating on bending forward, and history of giddiness and headache. Her past history was found to be D&C(dilation and curettage)and her past medication history was found to be,

Tab NAPROXEN-500MG-SOS

Tab RESTYL -0.5MG-0-0-1

Tab BILASTINE -20MG-0-0-1

Cap RABICIP D -1MG-1-0-0

Her personal history is regular bowels and bladders and sleep disturbed, and appetite is good.

The physical examination in patient differs in some criteria that WBC count, ESR,ALP, Serum chloride are increased more than the normal value as well as MCV, MCH, Lymphocytes, blood urea nitrogen are decreased than the normal value. The radiographic examinations performed are MRI BRAIN WITH CISTERNOGRAM,CT scan.Impression for MRI BRAINWITH CISTERNOGRAM -is observed that,

1 Gliotic focus in right parietal white matter.
2 Then rim of fluid in left nasal cavity .No obvious defect in the floor of anterior cranial fossa. Contrast CT cisternogram, may be suggested for further evaluation.
3 Partial empty sella.

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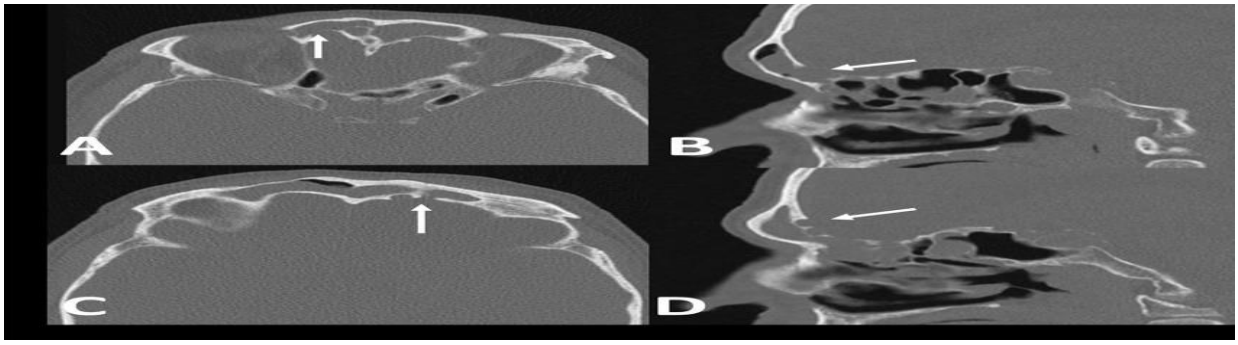
And the impression forCT scan is observed as normal plain CT study of brain. Through all the data of patient, chief complaints,physical examination and radiographic examination the diagnosis is characterized as"LEFT CSF RHINORRHEA"

CT SCAN



MRI BRAIN WITH CISTERNOGRAM

The etiology of CSF rhinorrheamay traumatic, idiopathic, surgical (or)due to inflammation. The signs and symptoms are headache, metallic taste, watery discharge from the nose,neck stiffness. The CSF rhinorrhea is a rare disease,leakage of CSF into the nose and clear fluid (or) fluid mixed with blood, there is no clear pathophysiology on CSF rhinorrhea it is mainly based on the basic circulation.

The standard drug therapy of CSF rhinorrhea can be managed by;

Prophylactic antibiotic can be used to prevent meningitis

Acetazolamide decreases formation of CSF

Mannitol as per ICP.

FOLLOW-UP AND OUTCOMES:

According to all the laboratory profiles,mentioned above, the patient has been diagnosed with CSF rhinorrhea and physicians prescribed the following medications in order to control or to prevent the further complications of the disease.

DISCUSSION:

CSF rhinorrhea is a rare, Rhinorrhea from cerebrospinal fluid as a result of the impairment of the thin fovea ethmoidal, CSF rhinorrhea is prevalent following NOE fractures. In NOE fracture series,the prevalence of CSF

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rhinorrhea varies from 40%to 50%. The vast majority of CSF leaking stops on its own within 10 days pf NOE fracture repair, and meningitis is extremely rare. Reducing fracture fragments is expected to help restore dura matter stability and stop CSF leakage. With the basic regimen of bed rest , head elevation, and tight sinus precautions, 85 percent of CSF leaks cured in 2 to 10 days in a series of 34 patients with CSF leaking following any oral and maxillofacial trauma (Or) skull base trauma.

The disintegration of barriers separating subarachnoid space and the paranasal sinuses causes rhinorrhea around the cribriform plate.Trauma,iatrogenic, neoplastic, congenital, and inflammatory. A CSF leak in the cribriform region may occur spontaneously and be associated with a meningoencephalocele, which is the soft tissue of the anterior cranial fossa herniating through the base of the skull. Although conservative therapy may be utilized to treat cribriform CSF leaks following blunt force trauma, surgical intervention is usually required to close other types of CSF leaks to avoid significant consequences such as meningitis and abscess foetalis.40 TRANSSPHENOIDAL tumour surgery is the most prevalent surgical case , with an incidence of 0.5 percent to 15%.Because of the difficulty in closing the surgical defect, open craniofacial excision and trans-nasal endoscopic surgery are popular operative reasons.

CSF leakage has long been a difficult surgical problem to solve. Surgical repair should be performed on patients who are not cured after 3 to 4 weeks of conservative treatment. According to related research, patients who do not heal within 7 to 14 weeks of treatment should have their wounds repaired surgically as soon as possible .Dandy was the first patient with CSF leakage who underwent a surgical correction based on CT imaging. In 1926, he performed a forehead craniotomy leak repair. In 1948, Dohlman used the extra cranial method using an orbital incision to fix a CSF leak, while Wigand performed the first case of endoscopic surgery in 1981. Autologous transplantation material such as cartilage,bone, nasal septum mucosa, turbinate, fascia, abdomen fat, ear cartilage, and other autologous tissues are frequently used to correct CSF leakage. To employ endoscopy to treat CSF rhinorrhea with free tissue transplantation. Currently, the most common form of restoration is known as “cover and liner”. The term “cover”refers to the procedure of placing the cranial cavity. The graft material is placed between the bone and the dura matter using epidural endoscopic is a procedure. To inserting the graft inside the defect outside of the bony skull cavity. Endoscopy can be done in two ways, both of which can be done within the bony cranial cavity .The dura matter should be thoroughly removed from the edge of the skull defect during an epidural endoscopy to reveal enough support tissue for a stable repair. The surgical physician knowledge of the surgical technique and understanding of the graft determine the packing order. The first layer is adipose tissue while the second is muscle tissue.

TREATMENT:

ACETAZOLAMIDE decreases formation of CSF

PROPHYLACTIC antibiotics can be used to prevent meningitis

CSF rhinorrhea can be treated by prescribing the drugs based on patient chief complaints,past history, and past medication history.The main categories of drugs are antibiotics, proton pump inhibitors, NSAIDs, carbonic anhydrase inhibitors, peripheral histamine H_1 antagonist, laxative,benzodiazepines. The above categories are related to the above drugs that prescribed to patient on basis of the entire disorder”CSF RHINORRHEA”

CONCLUSION:

Overall,CSF rhinorrhea is potentially lethal condition that can be treated with the right level of care.Themain goal of this case study is to highlight the many treatment choices, raise awareness about the disease, and recommend referral to ENT specialist due to disease potential severity.

It may be concluded that CSF rhinorrhea affected people of all ages, with a female majority, and the endoscopic CSF rhinorrhea repair had a high success rate with low morbidity.

ETHICAL COMMITTEE APPROVAL:

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The ethical committee of Manipal hospital gave the clearance. We also received the patient's informed permission, which we have attached to this case report for the journal's reference section.

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