



## Subdural Hygroma- A Case Report

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### Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

### Article Information

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Case Study

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## ABSTRACT

**Introduction:** An accumulation of Cerebrospinal fluid in subdural spaces is known as subdural hygroma. It is encountered in all age-groups but overall, most common in elderly. The exact pathogenesis of Subdural Hygroma is still unclear.

**Presentation of Case:** A 03 months old female child was brought to Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India on date 02/10/2020 with the complaints of breathing difficulty, elevated body temperature, excessive enlargement of head with bulged and tense fontanel, high pitch shrill cry, restlessness, nausea and vomiting. On physical examination, it is found that head circumference was 44 cm, head size was enlarged, bulged anterior fontanel, angular cheilitis, pale conjunctiva as well as peripheral cyanosis were present. The child was diagnosed at birth and child was brought to Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha for surgical management of subdural hygroma.

**Intervention:** The treatment of patients was started immediately after admission. Burr-Hole Evacuation was done on 4th October 2020 and the patient was discharged on 08th October 2020.

**Conclusion:** In this report, we mainly focus on expert surgical management and excellent nursing care helped in managing the complicated case very nicely. The patient response was positive to conservative and nursing management. The patient was discharged without postoperative complications and satisfactory with recovery.

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**Keywords:** Burr-hole evacuation; cerebrospinal fluid; cystic atrophy; hydrocephalus; subdural hygroma.

## 1. INTRODUCTION

Subdural hygroma is a collection of cerebrospinal fluid that in subdural spaces that can occur in the postnatal period as consequences of either a traumatic rupture of arachnoid membrane with cerebrospinal fluid leakage in the subdural space or disturbance of cerebrospinal fluid circulation [1].

The subdural hygroma was first introduced by Rudolph Virchow in 1856. Subdural hygroma in infants are rare and rather implicate a delayed and nonacute process, subdural hygroma may develop rapidly or be delayed [2].

The head trauma, infections and spinal procedures are the most prevalent causes of subdural hygroma, which can occur in combination with brain atrophy, severe dehydration, excessive spinal leaking, or any other condition that causes a decrease in intracranial pressure [3].

Subdural hygromas pathophysiology is not fully known. The most typical explanation is a rip in the arachnoid layer that creates a ball-valve aperture that allows CSF to flow one way into the subdural area. Although this explanation is simple, it may not necessarily represent an accurate representation of the underlying mechanisms. It has been claimed that subdural hygromas are significant subdural effusions caused by a separation of the dural border cell layer with fluid accumulation. There is unquestionably a link between subdural hygromas and acute, chronic, and recurrent subdural hematomas [4].

There is as yet no accurate report to date on the incidence of subdural hygroma in infants [5].

Here we report a case of 03 months old female child with subdural hygroma.

## 2. CASE HISTORY

### 2.1 Patient Information

A 3 months old female child was referred to Pediatric outpatient department at AVBR Hospital, Sawangi (Meghe), Wardha on 2nd of

October 2020 with complaints about breathing difficulty, elevated body temperature, excessive enlargement of head with bulged and tense fontanel, high pitch shrill cry, restlessness, nausea and vomiting.

### 2.2 Medical/Surgical History

The patient had known case of subdural hygroma since birth. As narrated by the patient's mother, she was diagnosed with Subdural Hygroma with Cystic Atrophy by prenatal ultrasonography. After birth, the patient was referred to Govt. Hospital, Yavatmal, from Adilabad for further management and from there the case was referred to A.V.B.R. Hospital, Sawangi (Meghe), Wardha for surgical management.

### 2.3 Birth History

The patient was born at 36 weeks of gestation by Lower Segment Cesarean Section. The child did not cry immediately after birth and had history of Neonatal Intensive Care Unit stay due to respiratory distress after birth. At 28 days of a life, Neuroultrasonogram (NUSG) was done which was suggestive of prominent lateral ventricle with bilateral subdural hygroma with atrophy of cerebral hemispheres.

### 2.4 Immunization History

Immunizations were not administered to the patient in accordance with the national immunization schedule as prescribed by the doctor.

#### 2.4.1 Anthropometry measurement of child

The child general anthropometric measurements, length of child was 59 cm (27.67 percentile), weight was 5 kg (11.12 percentile), head circumference was 44 cm (increased), mid upper arm circumference was 13 cm and chest circumference was 36 cm.

### 2.5 Physical Examination

The patient had a mild fever, looked undernourished, and had an enlarged head, a bulged anterior fontanel with head circumference of patient was 44 cm, peripheral cyanosis,

angular cheilitis, and pale conjunctiva on physical examination.

**On Central Nervous System:** Normal tone and power in all four limbs. Plantar reflex were extensor on the both side.

## 2.6 Diagnostic Assessment

### 2.6.1 Blood investigation

**Complete Blood count:** Hemoglobin level was 9.2gm/dL (anemia), Mean Corpuscles Hemoglobin count was 26.2 pico gram(decreased), Total Red Blood Cells was 3.26 million / cu. mm (decreased), Total White Blood Cells was 9100/cubic micron, Total Platelet Count was 4.3 lac/cu.mm, Hematocrit was 26.1 % (decreased), Serum Creatinine was 0.3 mg / dl (decreased), Coagulation Profile: APTT- control: 30, APTT- patient: 49.0; Prothombin Time- control=12.5, Prothombin Time- patient =13.2.

**Sickling test:** Negative

**RTPCR for COVID 19:** Negative

**HIV test:** Non-Reactive

**HCV test:** Non-Reactive

**HBS Ag:** Non-Reactive

### Magnetic Resonance Imaging (MRI) findings:

**The MRI Brain (both Plain and Contrast) revealed:**

- Extradural T1 is to hyperintense, T2 FLAIR hyperintense and subtle diffusion restricted areas are noted along the bilateral frontal, temporal, parietal regions. Maximum thickness of the collection is 14 mm along the right frontal region.
- Subdural T1 hypointense, T2 hyperintense, suppressed on flair and subtle diffusion

restricted areas are noted along with the bilateral frontal, temporal and parietal regions. Maximum thickness of the collection is 16.0 mm along the right high frontal region.

- Late subacute epidural and subdural hemorrhages/ hygroma along the bilateral frontal, temporal and parietal regions.
- Atrophy of the both cerebral hemispheres is seen.
- Impression of MRI: Late subdural and Epidural Hygroma with Cerebral Atrophy.

**2D Echo findings:** The 2D Echo findings revealed that the child had Situs Solitus Levocardia and Patent Foramen Ovale with left to right shunt.

## 2.7 Management

There is no specific medical management for Subdural Hygroma. Symptomatic treatment with surgical intervention was given to the patient.

## 2.8 Symptomatic Treatment

The symptomatic treatment was listed in Table 1.

## 2.9 Surgical Management

Surgery was the only option for the patient with subdural hygroma. On the patient, surgery was performed on the Right and Left Frontal Turbinates, And Suction Evacuation of the Subdural Hygroma. The surgery was done under general anesthesia on 4th October 2020.

## 2.10 Nursing Diagnosis

1. Ineffective Cerebral Tissue Perfusion related to increased ICP (Intracranial Pressure).

**Goal:** Enhance tissue perfusion

**Table 1. List of drugs and its dosage**

Sr. no.	Name of the drug	Dose	Route	Frequency	Drug action
1.	Injection Ceftriaxone	250 mg	Intravenous	Twice a day	Antibiotics
2.	Injection Amikacine	75 mg	Intravenous	Once daily	Antibiotics
3.	Injection Pantoprazole	5 mg	Intravenous	Once daily	Antacid
4.	Injection Emset	50 mg	Intravenous	Twice a day	Antiemetic
5.	Injection Levetiracetam	4 mg	Intravenous	Three times a day	Anticonvulsant

**Intervention:** Assess for sign of decreased tissue perfusion, monitored vital signs, Elevate the head of the bed gradually about 15-45 degrees as indicated and measure head circumference and appearance of anterior fontanel.

2. Altered body temperature related to infection

**Goal:** To maintain normal body temperature.

**Intervention:** Monitored vital signs and provide medication as prescribed by doctors.

3. Risk for infection related to surgical incision (Burr-Hole Evacuation).

**Goal:** To prevent from infection

**Intervention:** Assess the site of surgical incision, monitored vital signs, hand wash before and after providing the care to patient and provide medication as prescribed by doctors.

### 2.11 Nursing Management

As per criteria, the nursing care was given to maintain the health status and to prevent further complications.

- Provided comfortable position to the child.
- Monitored vital signs of the patient.
- Administered all the prescribed medications to the child.
- Monitored intake and output of the patient.
- Assisted parents while doing the daily activity of the patient.
- Health education given to the parents regarding feeding, medication administration, disease condition and prognosis as well as how to take care at home and follow up.

### 2.12 Therapeutic Diet Plan

Provide high caloric formula milk or breast milk to the infant with kotari spoon.

### 2.13 Prognosis

On the patient, surgery was performed on the right and left frontal turbinates, and suction evacuation of the subdural hygroma. The parents

were informed about the need of giving medication regularly as prescribed by doctors. At the time of discharge, the patient's condition was satisfactory. The child was an infant with a special ailment, the parents were educated about the disease's prognosis as well as follow-up.

## 3. DISCUSSION

An accumulation of Cerebrospinal fluid in subdural spaces is known as subdural hygroma [1]. Most commonly followed by head injury or decompressive craniectomy [6]. In our case, the patient had breathing difficulty, elevated body temperature, excessive enlargement of head with bulged and tense fontanel, high pitch shrill cry, restlessness, nausea and vomiting. The exact etiology of subdural hygroma is mostly considered as idiopathic.

Subdural hygroma can be seen on CT; however, the differentiation from subdural hematoma or cerebral atrophy is not always possible. Contrast enhanced MRI is useful for differentiating the two entities [6]. In our case MRI (both Plain and Contrast) was done to make clinical diagnosis.

Most of the subdural hygroma resolve spontaneously and do not require surgical intervention [7]. However, a subset of patients who develop compression symptoms will require surgical intervention to avoid permanent neurological sequel [6]. In our case, the patient was diagnosed of Subdural Hygroma with Cerebral Atrophy. The patient was treated with antibiotics, antacid, antiemetic and anticonvulsant drugs. They had performed Right and Left Frontal Turbinate Burr-Hole and Suction Evacuation of Subdural Hygroma.

The decision of choice to perform surgical procedure is emphasized by clinical and radiological finding. For making therapeutic intervention, the combination of structural functional imaging in the form of scan Technetium-99m Ethyl Cysteinate Dimer (99m Tc-ECD) of brain and Single Photon Emission Computed Tomography (SPECT) of the brain may be highly beneficial [6]. In our case, the MRI Brain (both Plain and Contrast) was done to make a diagnosis.

Various surgical procedures have been mentioned to treat chronic subdural

hygroma including Transfontanel percutaneous Aspiration, Subdural Drains and burr-hole evacuation with or without subdural shunting or drainage [6]. The Right and Left Turbinate Burr-Hole and Suction Evacuation of Subdural Hygroma were done on 4th October 2020.

Subdural hygroma in infants and children is a condition that compresses the developing brain; relief of the pressure allows the brain to re-expand, resulting in normal development and a good outcome. Because this condition is distinct from other disease entities that resolve spontaneously without treatment, an accurate diagnosis is critical and it is essential [8].

#### 4. CONCLUSION

In recent years, an increasing number of studies on prenatal diagnosis and management have been published.

This case report is a contribution to the knowledge of rare malformation of brain.

#### CONSENT

While preparing case report and for publication parental informed consent has been taken from parents.

#### ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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