

## Distal Catheter Migration to Mediastina in Ventricular-peritoneal Shunt, a Case Report

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### Abstract

Ventricular-peritoneal shunting (VPS) is common neurosurgical procedure in childhood and have many complication like malfunction infection and malposition, we present a case with a positioning of distal catheter in thoracic region.

**Keywords:** Pericardial Effusion; Ventricular-peritoneal Shunt; Shunt Dysfunction

### Introduction

VPS is common neurosurgical procedure in childhood who present with hydrocephaly, shunt malfunction have many cause [1], malposition and migration of the distal catheter can be seen in many patient, many literature report of migration of distal catheter site like upper GI, bowel abdominal wall scrotum perinea region [2] but migration of catheter to thoracic region and mediastina region is rare and can cause serious complication, we report a child with malposition of distal catheter in pericardium and presented with pericardial effusion and dyspnea

### Case Presentation

1.5 years old patient admitted with tachypnea and fever and poor nutrition, with history of VPS in 5 month ago because of hydrocephaly due to preterm intra ventricular hemorrhage, in first evaluation body temperature was 38.2 axillary and patient in ill condition and mild dehydration and high rate of respiration and tachycardia, reservoir of shunt absolutely intact, after rehydration and taking blood sample, patient go under head computed tomography (CT) and Baby gram, in head CT ventriculomegaly without periventricular edema and tip of proximal catheter in ventricular position (Figure 3), in baby gram we find distal catheter tip in mediastina and cardiac thoracic ratio increased (Figure 1), for better evaluation chest CT without contrast in parenchymal and mediastina view was done catheter tip migrate from diaphragm and penetrate the pericardia (Figure 2), cerebrospinal fluid (CSF) sample was taken all parameter in normal range, patient go under surgery electively with cooperation of pediatric surgeon, distal catheter

discard and new one is also insert in peritoneal region, after surgery patient have good recovery and with normal and stable condition discharge.

**Figure 1:** PA chest X ray shows increase cardiac thoracic ratio and position of distal catheter tip in thoracic.

### Discussion

Shunt malposition a common cause of shunt malfunction specially in childhood, distal catheter malposition range from 5 to 47 percent and reported in upper gastro intestinal (GI) track, bowel, scrotum, abdominal wall, perinea or arterial [3], malposition can cause severe CNS infection or and obstruction of shunt output and deteriorate the neurological condition of patient [4], migration to thoracic space is very rare and can cause serious problem like tam-

**Figure 2:** Axial chest CT scan in mediastinal view: tip of catheter migrate to mediastina and penetrate the pericardia.

**Figure 3:** Axial non contrast head CT scan shows ventriculomegaly without periventricular edema and position of proximal catheter position.

poned or myocardial penetration or myocarditis. The exact mechanism of malposition not recognized but insertion technics inflammation process or anatomical weakness in abdominal wall can major cause of malposition [5], in this case we guess large defect in diaphragm and long peritoneal catheter part and weak peritoneal adhesion and support cause migration of distal tip.

### Conclusion

Migration to Pericardial in VPS is so rare and can cause pericardial effusion, tamponed, myocarditis, or arrhythmia, asymptomatic patient may be missed, in our center we prefer to repositioning the shunt or remove of all system to future serious condition, but some author recommend follow up in asymptomatic patient [6,7].

### Compliance with Ethical Guidelines

All steps of this research were reviewed by Urmia University of Medical Sciences, ethical committee, with ethical code of 46/4321.

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### Conflict of Interest

The authors declared no conflict of interest.

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