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Extraperitoneal Fluid: a Rare Complication of Ventriculoperitoneal Shunting

Xiaohuan Yang[1], Huangyi Ji[2] and Yingming Yang*[2]

[1]*Department of Science and Education, First Affiliated Hospital, Shantou University Medical College, Shantou, China*

[2]*Department of Neurosurgery, First Affiliated Hospital, Shantou University Medical College, Shantou, China*

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***Corresponding author:** Yingming Yang, Department of Neurosurgery, First Affiliated Hospital, Shantou University Medical College, Shantou 515041, People's Republic of China

Abstract

A 22-year old male who had undergone a ventriculoperitoneal (V/P) shunt because of obstructive hydrocephalus began to develop vomiting, abdominal distension and somnolence on the third day post operation. CT scan revealed dilated lateral ventricles, intestinal pneumatosis and extraperitoneal fluid. The patient underwent surgery and the abdominal catheter of the shunt was reinserted. The patient did well after operation. Even though V/P shunts may induce several complications, there is no case of extraperioneal fluid of shunts in the literature.

Keywords: V/P shunt; Extraperitoneal fluid; Complication

Introduction

In March, 2014, a 22-year-old male patient developed a sudden onset of dizziness for six days and vomiting for one day. The physical examination showed limited upper gaze. Brain CT scan revealed a space-occupying lesion behind the pineal and ventriculustertius, which caused obstructive hydro cephalus. So he underwent Ventriculoperitoneal (V/P) shunttorelief hydrocephalus. After operation, the patient did well until the third day. He developed vomiting, reduced bowel sound and abdominal distension. And the X ray showed intestinal pneumatosis (Figure 1A). We considered the abdominal symptoms may be cause by paralytic intestinal obstruction, which is caused by autonomic nerve dysfunction with midbrain compression after V/P shunt. The patient received gastrointestinal compression. But the patient still presented abdominal distension and vomitting. On the tenth day after operation, CT scan revealed fluid collection in the right abdomen and pelvic (Figure 1C). If the fluid collection was in the perineum, it may compress the bladder uniformly. But the focal fluid collection compressed the bladder on the right side (Figure 2C). We consider the fluid collection should be in the extraperitoneal space. And the focal extraperitoneal fluid resulted in intestinal obstruction, which caused vomiting and abdominal distension. There are many causes of extraperitoneal fluid collection. At that time, we were no sure what cause extraperitoneal fluid collection.

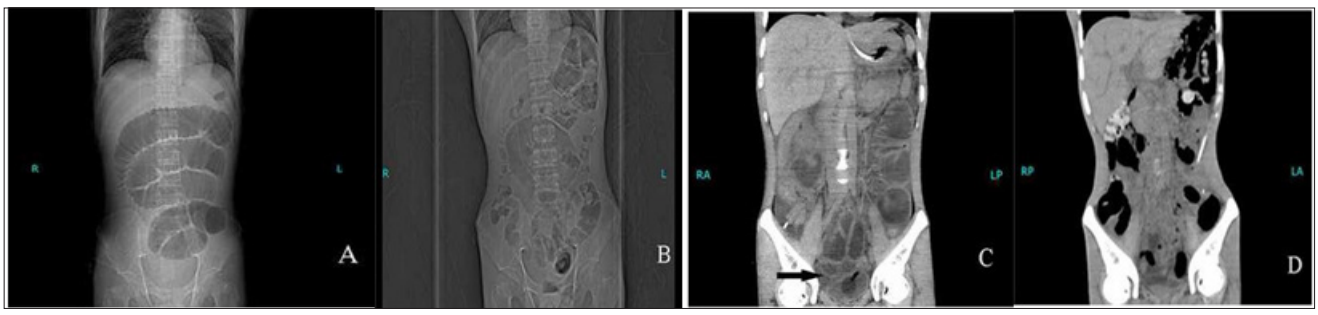

Figure 1: (A) X ray after first operation; (B) X ray after second operation; (C) Focal fluid collection in the abdomen and pelvic, and the compression of focal fluid collection caused the displacement of the bladder (Black Arrow); (D) Disappeared extraperitoneal fluid after second operation.

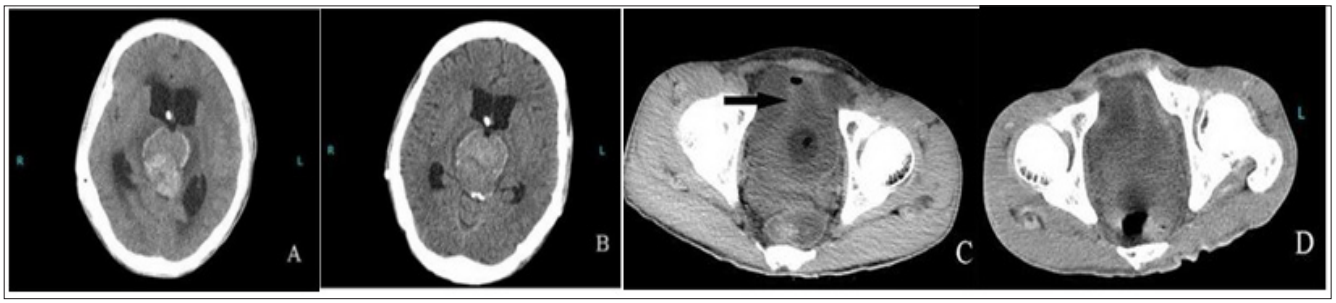

Figure 2: (A) Dilated lateral ventricles after first operation; (B) Reduced lateral ventricles after second operation; (C) Displacement of the bladder (Black Arrow); (D) Disappeared extraperitoneal fluid and the recovery of the bladder after second operation.

The mental status of the patient was getting worse and worse. On the 23th days after operation, the CT scan showed dilated lateral ventricle (Figure 2A), which may be caused by the blocked shunt. The shunt obstruction appeared following extraperitoneal fluid. And what's the relationship between them? The extraperitoneal fluid and obstructed catheter revealed the possibility of the abdominal catheter was inserted into the extraperitoneal space in the first operation. The collection of CSF in the limited extraperitoneal space obstructed VP shunt. If that is true, the abdominal catheter should be reinserted. We did the abdominal catheter exploration surgery.

The patient was operated on and the abdominal catheter of V/P shunt was removed from the extra peritoneal space. Cerebrospinal fluid (CSF) collection was noted in the extraperitoneal space. The extraperitoneal fluid was cleaned. Afterwards, the sterilized abdominal catheter was reinserted into the opposite side of peritoneum through the different incision. After operation, the CT scan revealed disappeared extraperitoneal fluid, reduced intestinal pneumatosis and reduced lateral ventricle (Figure 1B & 1D) (Figure 2B). No more abdominal distention and vomiting were observed after operation, which prove extraperitoneal fluid caused intestinal obstruction in the other way.

V/P shunt is widely used in treating hydrocephalus. However, as more patients with hydrocephalus survive and live longer, more complications, which may be seen after V/P shunt insertion [1,2]. 5% and 7% of abdominal complications by V/P shunt insertion are reported.2 Most of them are retraction of catheter, incision hernia and pseudocyst. There is no case about extraperitoneal fluid related to V/P shunt had been reported? Extraperitoneal fluid is a rare complication of a V/P shunt. In patients with abdominal symptoms, and surgical history of V/P shunt insertion should be suspect, and thus, an abdominal CT scan should be mandatory. And if the CT scan revealed extraperitoneal fluid, the dislocation of abdominal catheter should be considered. Laparoscopy approach appears to be effective in positioning of the shunt catheter under direct visual control for avoiding dislocation.

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