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Case Report

Recurrent Ventriculoperitoneal Shunt Pseudocyst in a Nine-Year-Old Girl

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Summary. A case of a ventriculoperitoneal shunt pseudocyst in a 9-year-old girl diagnosed using computed tomography is reported. Two attempts at relocation of the shunt failed to prevent reaccumulation of cerebrospinal fluid. A ventriculoatrial shunt was then performed with a successful outcome. Such pseudocysts should be part of the differential diagnosis of abdominal processes in patients with ventriculoperitoneal shunts. If relocation of the shunt outside the pseudocyst is unsuccessful, a ventriculoatrial shunt is generally indicated.

Key words: Ventriculoperitoneal shunt – Pseudocyst – Ventriculoatrial shunt

The treatment of hydrocephalus by shunting cerebrospinal fluid (CSF) into the abdominal cavity is not uncommonly related to dramatic complications. Fibrous encasement and obstruction of the ventriculoperitoneal shunt tip and infection are the most common complications, but migration of the catheter tip to perforate the abdominal wound, bowel, umbilicus, vagina, and scrotum have been described [1, 5, 8, 11]. Several reports exist of ventriculoperitoneal shunt cysts within omentum or loops of matted bowel [4, 6, 9], or CSF ascites related to inadequate resorptive capacity of the peritoneum [2, 3, 7, 10, 12]. We here report a case of recurrent ventriculoperitoneal shunt pseudocysts in multiple intraabdominal locations eventually necessitating a ventriculoatrial shunt.

Case Report

A 9-year-old girl of Egyptian descent presented to the Harbor-UCLA Emergency Room complaining of a 1-week history of abdominal pain, distension, and vomiting. Her history included placement of a ventriculoperitoneal shunt at age 3 months for meningitis. Four shunt revisions were performed several years later for obstructive problems at both the peritoneal and ventricular end of the catheter. On her present admission to the emergency room she was hemodynamically stable with a normal temperature, white count, hematocrit, and electrolytes. Her abdominal examination revealed distention, normal bowel sounds, and moderate diffuse tenderness. A large vague density was present in the midabdomen on plain films of the abdomen. She was admitted and placed on nasogastric suction. Computerized tomography (CT) revealed a large abdominal cystic fluid collection in the upper and midabdomen (Fig. 1).

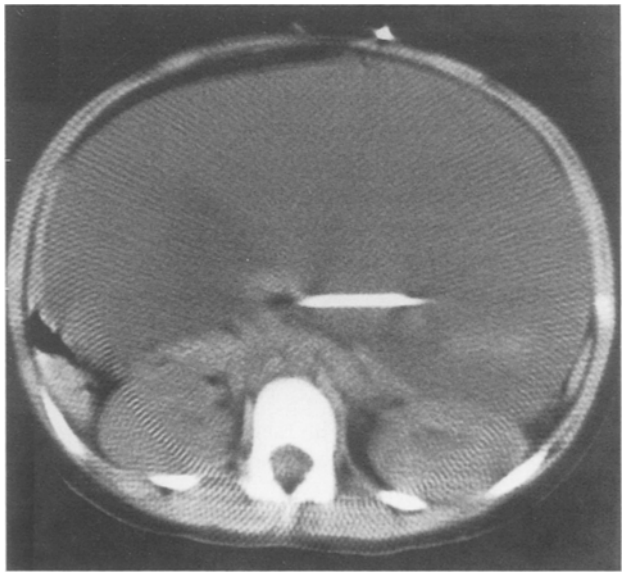

Fig. 1. Computerized tomography (CT) image of ventriculoperitoneal shunt and large pseudocyst at level of kidneys

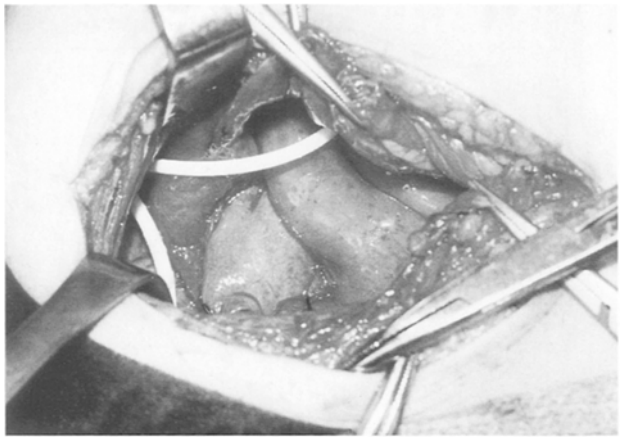

Fig. 2. A thick walled pseudocyst around the ventricuoperitoneal shunt was found at operation; this was filled with cerebrospinal fluid (CSF)

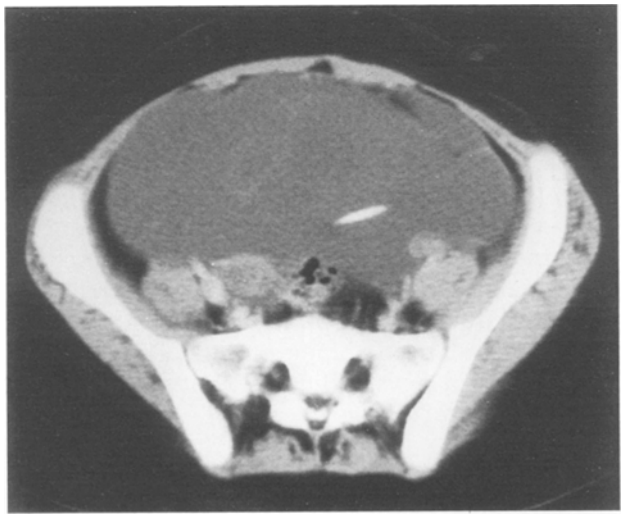

Fig. 3. Computerized tomography image several days postoperatively revealing reaccumulation of fluid, this time predominantly within the pelvis where the shunt had been relocated

She was taken to the operating room where a huge pseudocyst fluid collection was found filled with 3 l of CSF. The walls of the pseudocyst were comprised of both peritoneum and loops of matted small bowel (Fig. 2). There was no obvious evidence of peritoneal inflammation. The shunt tip was removed from the pseudocyst and replaced in the pelvis. Part of the wall of the pseudocyst was excised and sent to pathology revealing a fibrous cyst wall with granulation tissue. Cultures of the fluid were negative. She did well postoperatively and tolerated a clear liquid and then regular diet without problems. She was discharged home 1 week postoperatively. Seven days later, she returned to the emergency room with a 2-day history of intermittent infraumbilical pain. Her abdomen was distended, firm, and tender, similar to her prior admission. She again was afebrile, and had normal electrolytes, white count, and hematocrit. Her abdominal films again revealed a density in the central abdomen. A CT scan revealed a recurrence of the CSF cystic collection, but this time it was predominantly in the pelvis where the shunt had been replaced (Fig. 3). On her fifth hospital day, after having been treated with a course of nasogastric decompression without relief of her symptoms, she underwent reexploration. The reaccumulated fluid was drained and the ventriculoperitoneal shunt was placed outside of the pseudocyst which again consisted of loops of matted small bowel and peritoneum in the pelvis. The bladder was intimately associated with the pseudocyst wall. Postoperatively, the patient improved transiently but recurrence of her vague abdominal symptoms prompted a repeat CT scan on postoperative day 13 revealing reaccumulation of the pelvic pseudocyst with inadequate drainage by the penroses. On postoperative day 17 a ventriculoatrial shunt was performed via the right external jugular approach and she was discharged home 5 days postoperatively. She has remained asymptomatic and has been doing well on follow-up visits.

Discussion

This case illustrates several unique features of abdominal pseudocysts associated with ventriculoperitoneal shunts. The patient developed abdominal symptoms secondary to a large CSF-filled pseudocyst compressing the bowel. Although she had meningitis at a young age, she had no recent bouts of meningitis, encephalitis, or peritonitis which could account for an inflammatory reaction in her peritoneum around the catheter. It has been proposed that even mild peritonitis may impair the ability of the peritoneum to resorb fluid and that when the inflammatory reaction subsides, absorptive function is regained [2]. The presented patient had no evidence of inflammation at operation although the loops of matted bowel did give presumptive evidence of prior peritoneal irritation.

Replacement of the shunt tip into the pelvis resulted in reaccumulation of CSF fluid. The catheter tip was again exteriorized from the cyst and once again a CSF collection developed. The literature is mixed with reports of successful [7, 9] and failed [2–4, 7, 10, 12] attempts ro relocate ventriculoperitoneal catheters after CSF pseudocyst or ascites formation. In general, after several failed at-

tempts to prevent CSF pseudocyst formation by catheter relocation, a ventriculoatrial shunt is performed. A lumbar-peritoneal shunt was attempted in one patient [4] for a ventriculoperitoneal shunt pseudocyst, but this was unsuccessful; in another patient the shunt tip was placed successfully into the ureter [4]. Our patient has done well since the ventriculoatrial shunt, as have most patients in prior reports with the exception of one patient who developed congestive heart failure requiring revision back to a ventriculoperitoneal shunt [7].

Any patient with a ventriculoperitoneal shunt who presents with abdominal symptoms should have a CSF pseudocyst or CSF ascites included in the differential diagnosis. CT scanning is extremely valuable in reaching the diagnosis. Once made, the diagnosis mandates surgical intervention. As successful outcomes have been reported by exteriorizing the shunt from the pseudocyst or excising part of the wall of the pseudocyst, this is probably warranted as the initial method of management. Failure of this approach, however, indicates a more generalized deficiency in peritoneal resorptive capacity for whatever reason and probably warrants a ventriculoatrial shunt.

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Buchbesprechung

Die Verlage werden gebeten, von der unverlangten Zusendung von Besprechungsexemplaren abzusehen und zunächst eine Anfrage an die Redaktion zu richten, die gegebenenfalls dann ein Exemplar erbitten wird. Für die Rückgabe unverlangt eingesandter Besprechungsexemplare kann keinerlei Gewähr übernommen werden.

T. Nasemann, W. Sauerbrey: **Lehrbuch der Hautkrankheiten und venerischen Infektionen für Studierende und Ärzte.** 5., erweiterte und von T. Nasemann neubearbeitete Auflage unter Berücksichtigung des Gegenstandkataloges, mit differential-diagnostischem Farbatlas von Hautkrankheiten und 45 Examensfragen. Springer, Berlin Heidelberg New York London Paris Tokyo 1987. XXV, 475 S., 337 Abb., 9 Farbtafeln. Brosch. DM 68,–

Die 5. Auflage des Lehrbuches „Nasemann-Sauerbrey" hält sich an das inzwischen bewährte Schema der Darstellung dermatologischer Krankheiten. Wiederum sehr beeindruckend sind die schematischen Darstellungen z. B. über pathophysiologische Entwicklungen. Tabellarische Übersichten und Merksätze zeigen in besonderem Maße das didaktische Geschick der Autoren. Flußdiagramme in der differentialdiagnostischen Abklärung von Hauterscheinungen erleichtern auch dem Unerfahrenen den Weg zur definitiven Diagnose. Dem Buch ist eine weite Verbreitung auch über Dermatologenkreise hinaus unter allen praktisch und klinisch tätigen Ärzten zu wünschen. Einziger Kritikpunkt: Die Dermatologie lebt von Sehen und Erkennen. In diesem Sinne wäre zu wünschen, daß die eindrucksvollen Abbildungen farbig erscheinen. Dem steht aber wohl der Zwang zur erträglichen Preisgestaltung entgegen.

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