Ventriculobiliary shunt

The basic management of hydrocephalus includes shunts to the peritoneum and atrium. However, there are particularly complex patients in whom it is necessary to look for atypical places for implanting the distal catheter.

The gallbladder is a well-described option and it can be safely used [1].

Pancucci et al., reported the case of a 4-month-old baby with a wide optic-chiasmal hypothalamic glioma generating hydrocephalus with high protein values in CSF. Ventriculobiliary shunting was decided, and the distal catheter was directed by the assistance of laparoscopic surgery.

The outcome was satisfactory.

Laparoscopic placement of a distal catheter in the gallbladder has not been described in the literature; herein, they describe the tenets and the technical tips of this approach [2].

Since 2000, 1,325 shunts have been implanted in pediatric patients. Only 3 patients required a ventriculobiliary shunt. We report 3 cases: a 7-year-old boy with a surgically treated complex heart disease, a 16-month-old girl with hydrocephalus secondary to a brain tumor and multiple bacteremias secondary to an infection of the central venous reservoir, and a 4-year-old girl with nonreabsorptive hydrocephalus caused by intraventricular bleeding due to premature birth, necrotizing enterocolitis and shunt infections with abdominal pseudocysts, which caused multiple abdominal septations and, finally, a nonreabsorptive peritoneum. At present, cases 1 [45 months after ventriculobiliary shunt (VBS)] and 3 (27 months after VBS) are symptom free, while case 2 (14 months after VBS) died of infectious respiratory complications. The gold standard for the treatment of nonreabsorptive hydrocephalus is a ventriculoperitoneal shunt, the second option is a ventriculoatrial shunt, and the third option is uncertain. In our short experience, a ventriculo-gallbladder shunt is a good option when there is no abdominal hypertension [3].

Case series

Eighteen patients underwent placement of VGB shunts as an alternative to VP shunt therapy for the following reasons: malfunction of the VP shunt due to suspected failure of the peritoneum to absorb cerebrospinal fluid (17 cases) and multiple intraabdominal general surgical procedures (1 case). The patients ranged in age from 4 months to 17 years (mean 6.5 +/- 6.1 years [standard deviation {SD}]). All patients underwent preoperative imaging of the gall-bladder either by ultrasonography or computed tomography scanning. A team consisting of a pediatric neurological surgeon and a pediatric general surgeon performed all operative procedures. The procedures were conducted by open laparotomy to precisely place the appropriate length of distal catheter and to anchor it to the gallbladder wall.

There were 2 early shunt malfunctions, both obstructions due to “sludge” (1 in the biliary duct and 1 in the common bile duct). A late-onset (5-year) malfunction occurred secondary to gallbladder stones. In all 3 cases of malfunction, the devices were successfully converted to VP shunts. In 1 patient a conversion to a VP shunt was chosen following a general surgical intervention. There were 2 shunt

infections (Staphylococcus epidermidis and Haemophilus influenzae). These were successfully treated. Two patients underwent conversion to a VGB shunt on 2 occasions. Thirteen patients had functional VGB shunts at the time of their last follow-up assessment. The follow-up for these 13 patients ranged from 1 to 8 years (mean 2.1 +/- 2.0 years [SD]).

Ventriculogallbladder shunts may be considered for the treatment of hydrocephalus in children when the peritoneal cavity cannot be used as a distal terminus [4].

References

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