

Commentary: Shunt Infection in a single institute: what can we found?

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Shunt is a classic treatment for hydrocephalus, whereas these surgery has a high proportion of complications, mainly due to infection and shunt device blockage after shunting. Infection after shunt surgery is still a relatively high incidence of complications, postoperative shunt infections were reported in 0.3-17% [1-2] of cases in most neurosurgical institutes. This is a burden for patients and their families because of the need for long-term use of antibiotics and the cost for replacement the shunt devices. In the study[3], we retrospectively analyzed the infection cases after shunt surgery in our hospital during 2013.1.1-2014.12.31. In 343 cases, 13 (3.8%) confirmed infections were found. And now, two years later, to further statistics, we included a total of 976 cases in five years(2013.1.1-2017.12.31) and found 43 cases (4.4%) with shunt infection.

As further data analysis and summarization are needed, we have not completed results. but preliminary analysis of such cases, confirmed some of the previously discovered facts, as we reviewed. The infection rate of patients undergoing ventriculo-peritoneal shunt surgery was 4.3% (36/841), and the infection rate of lumbo-peritoneal shunt surgery was 5.2%(7/135). There was no statistical difference between the two groups, as mentioned, there is no study compelling enough to prove which shunt surgery has less complications, so if L-P shunt can be an alternative to V-P shunt remains controversial[4-5]. Previous studies found most cases of shunt infections are present within 2 months (up to 92.3%) of the shunt surgery, So we suggest that early postoperative(2 months) is a high incidence of infection. Our further data confirmed this result again, 38 of 43 cases were infected within 2 months after surgery, when this outcome still have statistical significance. Among the 43 cases, there are 26 cases confirmed pathogens, including 18 cases of cocci (Staphylococcus epidermidis 10, Staphylococcus aureus 5, Staphylococcus capitis 1, Staphylococcus lugdunensis 1 and Enterococcus faecium 1), and 7 cases of bacteria (Baumann 2, K.Pneumoniae 2, P.Aeruginosa 2, P. mirabilis 1), 1 case of cryptococcal infection. Compared with the previous findings, 10 of the 13 cases have clear pathogens, 9 of which are cocci, it seems further data appear to suggest an increase in infections caused by other bacteria in recent years.

In the process of statistics, we found that may be attributed to the use of antibiotics, the detection rate of pathogens is not very high, but at the same time it suggest that the needs to remove the shunt devices maybe not necessarily necessary. In some cases, the clinical symptoms can also be eliminated by antibiotics treatment[6]. For these patients, the removal of the shunt devices always mean very high cost for these devices, so they tend to choose or even demand for antibiotics treatment. After a period of treatment, some cases avoided from shunt devices removal. However, in the previous study, 83.3% (5/6) had a good outcome after totally removing catheters, in contrast, only 42.9% (3/7) has a good outcome of the cases not completely shunt devices. Further analysis and statistics for new data has not completed yet and we will doing more effort for that.

In addition, longer follow-up may lead to some conclusion changes, and we will continue to pay attention to the clinical data of these patients. In addition, previous studies have suggested that the causes of hydrocephalus such as trauma may be a risk factor for postoperative infection, and we will also pay attention to this situation in the study for this larger sample series.

Despite the limited number, our further study confirmed some of the findings of previous studies: the most relevant infections after shunt surgery, most of which occurred early in the postoperative period within 2 months after surgery. Gram positive cocci were the most common bacteria in infective complication post-operation. In the previous study, there are 10 cases which pathogenic bacteria were clearly identified, Gram positive cocci accounted for 90% (9/10), and 80% (8/10) due to staphylococcus. In our further date analysis, we found that in cases which pathogenic bacteria are clearly identified, Gram positive cocci accounted for 69.2%(18/26), and 65.4%(17/26) due to staphylococcus. At the other hand, Gram-negative bacterium accounted for 26.9%(7/26) of these cases, this is a important difference from previous studies. Two major shunt surgical procedures, ventriculo-peritoneal shunt and lumbo-peritoneal shunt, did not show significant differences in postoperative infections. Most of them had good prognosis by removing the shunt device or using antibiotics. Although these are only a single-center retrospective study, as the sample increases and the follow-up time prolongs, this group of research gradually shows its significance, even in the age of Big Data.

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