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Antibiotic impregnated catheters reduce ventriculo-peritoneal shunt infection rate in high risk pediatric patients

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Introduction: The incidence of ventriculo-peritoneal (VP) shunt infection accounts for about 5% - 15%, but it can rise up to 70% in specific high-risk subgroups, representing a dramatic event, complicated by high morbidity and mortality rates. Antibiotic-impregnated catheters (AICs) have been designed to reduce shunt infections, but reports on their efficacy are discordant, especially in young children. The aim of this study is to assess, for the first time, the efficacy of AICs in newborns and infants at very high-risk for shunt infection.

Material and Methods: We reviewed the medical records of newborns and infants treated with a VP shunt for newly diagnosed hydrocephalus. Patients were divided in two groups: Group A was composed by children who received AICs, whereas Group B included children implanted with standard silicone catheters (non-AICs). We compared the shunt infection rate in both groups, and analyzed differences in specific high-risk subgroups (preterm newborns, children with post-hemorrhagic or post-infective hydrocephalus, and children with a previous external ventricular drainage).

Results: Forty-eight children younger than 1 year old were included in our study. Twenty-two patients were implanted with an AIC, whereas 26 patients received a standard silicone catheter. The follow up was at least 1 year (mean 8 ± 3 years). Infection rate decreased from 34,61% in non-AICs group to 9,09% in AICs group. Moreover, AICs showed to have a protective effect against shunt infections in all the specific high-risk subgroups analyzed.

Conclusions: This study demonstrates for the first time that AICs are effective in reducing VP shunt infection in high-risk pediatric patients younger than 1 year old.