

Nuclear Medicine Shunt Study to Assess Shunt Function

Woro George¹, Keanu Chee¹, Michael Handler²

¹University of Colorado Anschutz Medical Campus, Aurora, CO

²Children's Hospital Colorado, Aurora, CO

Objective

A shunt which has been in place for an extended period may develop fractures along its course. The presence of a gap does not provide evidence that the shunt is non-functional, as there can be preserved flow along a tract within the body's soft tissues. Even in cases where a shunt appears intact, questions may arise regarding its functionality. Assessing the presence of flow is crucial in determining whether operative intervention is necessary. A nuclear medicine shunt study can provide that information.

Methods

We reviewed the records of Children's Hospital Colorado for pediatric neurosurgery over a twenty-year period and identified nuclear medicine studies on patients with shunts. Demographic data, result of the study, and subsequent patient management and outcome were recorded.

Results

63 patients were identified to have the procedure, 60 with shunts in place with a question about flow, and with adequate data. Flow was documented in 34/60(57%) patients, and no flow in 26/60(43%). Of patients documenting flow, 31(91%) had no imaging sign or clinical symptoms of malfunction, of whom 2(6%) developed them before elective revision. 13(38%) of patients with flow did not receive shunt revision, for several reasons. Of the 26 patients documenting no flow, all were asymptomatic at the time of the nuclear medicine study. They were deemed to be shunt independent and no revision operation offered. Of these, 2 patients (8%) subsequently developed signs or symptoms of malfunction and later required a shunt, implying that the flow study was incorrectly performed or interpreted.

Conclusion

The nuclear medicine shunt study is highly accurate when correctly performed. Though infrequently described it can provide invaluable information to guide patient management.

Significance

The utilization of the nuclear medicine shunt study has the potential to transform the approach to managing patients with shunts. This diagnostic tool ensures tailored, effective care and optimizes the use of healthcare resources. Implementing informed and precise treatment strategies ultimately leads to improved patient outcomes while simultaneously reducing healthcare costs.