

International Conference on

Nuclear Medicine & Radiation Therapy

July 14-15, 2016 Cologne, Germany

Radionuclide shuntography for evaluation of V-P shunt in hydrocephalus

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Background: Radionuclide shuntography is a safe, simple and non-invasive functional imaging technique for determining V-P shunt tube patency and analyze changes in CSF with minimal radiation burden. This is particularly useful in children with hydrocephalus in whom V-P shunt is inserted to divert CSF drainage. V-P shunts are permanent treatment option for children with hydrocephalus and radionuclide shuntography is becoming a very popular technique because of the increasing numbers and survival of children with shunt-treated hydrocephalus.

Objective: The aim of this study is to analyze and document the usefulness of shuntography in the evaluation of V-P shunt in children with hydrocephalus.

Method: All shuntograms performed in our institution between 2008 and 2015 were included in this study. Radionuclide shuntography was performed with Tc99m DPTA injected into the shunt reservoir and images acquired using a dual headed MEDISO camera. A normal shuntogram is considered as free flow of radiotracer from site of injection to the distal end of shunt tube with evidence of spillage into the peritoneum.

Results: A total of 56 children were studied comprising of 32 males, 24 females with age ranges between 5-11 yrs. Different patterns of results were found, normal functioning shunt, total blocked tube due to mechanical defects, partial block tube due to infection or inflammatory debris and overflow of CSF. About 45% of our patients with suspected V-P tube malfunction had partial blockage.

Conclusion: Patients who are diagnosed with a partial tube blockage will require only flushing of the tube and antibiotics treatment, while mechanically block tube will require replacement. This distinction is critical considering the cost of replacement of tube and manpower time for surgery. There are currently no existing protocols for radionuclide shuntography, but critical attention to details, observation of strict aseptic technique and close collaboration between the nuclear medicine physician, pediatricians and neurosurgeons would improve diagnostic accuracy, this paper will also highlight this aspect.

Biography

Jawa Zabah Muhammad is a Senior Consultant in Nuclear Medicine and European Board Certified in Nuclear Medicine. He has dual specialist qualifications in Nuclear Medicine and Radiology and received his training at the Stellenbosch University. He is a fellow of the College of Radiologist of Nigeria, fellow of the South African College of Nuclear Physicians, fellow of the European Board of Nuclear Medicine. He has presented papers at various national and international conferences. In 2013, his research presentation received an award of distinction at the IMIC conference in Vienna, Austria. He is the Chief Editor of the *MDCAN Journal of Medical Sciences*.

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