



STUDY THE EFFECT OF ENDOSCOPIC THIRD VENTRICULOSTOMY IN INFANTS

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ABSTRACT Hydrocephalus can affect humans even before birth. Aqueductal stenosis have been found most commonly. Of late endoscopic third ventriculostomy has been found to be very effective in aqueductal stenosis. This study analyses the outcome of ETV among infants. This was a prospective study comprised of 42 children below one year of age having hydrocephalus due to aqueductal stenosis. They were treated with ETV. Results and complications were analysed. This study shows excellent outcomes with ETV in infants suffering from hydrocephalus due to aqueductal stenosis.

KEYWORDS : congenital hydrocephalus, endoscopic third ventriculostomy and infants.

INTRODUCTION

Hydrocephalus is defined as dilatation of ventricles. It was described by Hippocrates as early as in 466-377 BC¹, who described symptoms of headache, vomiting, visual disturbances and diplopia and explained the illness as a “liquefaction of the brain caused by epileptic seizure” since then a lot of publication have been made and the pathophysiology of csf flow has been studied, allowing a scientific approach to classifying this entity on the basis of its aetiology and formulating treatment strategies. The management is mainly surgical. Shunt surgery has been the mainstay of treatment for such patients. Aqueductal stenosis has been found in 15% to 60%^{2, 3} of hydrocephalus in children and its success rates in them have been found to be as high as 80%.

The purpose of this study was to evaluate the effectiveness of ETV in infants for hydrocephalus, which is a well established modality of treatment in children older than year.

MATERIALS AND METHODS

This was a prospective study carried out from march 2015 to feb. 2016. All patients in age below one year, with aqueductal stenosis and hydrocephalus defined by evan's ratio were included in this study. Radiological assessments were done with either CT scan or MRI were appropriate.

Total of 42 cases of hydrocephalus with aqueductal stenosis in infants qualified for inclusion in this study. ETV was performed on all of them. Post operative surgical outcomes and complications were noted. Patients were followed up in OPDs.

RESULTS

Out of 42 cases in the cohort, 28 (66.6%) were males and 14 (33.3%) were females. The mean age of the patients was 10.05 months. The presenting features were macrocephaly in all, Vomiting in 45.5%, irritability in 42.9%, delayed development was present in 80.4%, fullness of fontanelle and engorged scalp veins in 79.9%, sunset sign in 55.4%. 6 nerve palsy in 17%. In our study incidence of the infective complications was found to be 8%. None of them showed sign of ETV failure at discharge. At the end of one month 33 (78.5%) patients were relieved of their symptoms, of which 16 (48.4%) were in age of 6 to 9 months and 17 (51.5%) were in age 9 to 12 months age group. Total of 9 (21.4%) patients showed signs and symptoms of ETV failure and underwent VP shunt later. In the age group of 6 to 9 months ETV success was found in 16 of 22 patients i.e. 72.7% while in the age group of 9 to 12 months ETV success was found in 16 of 20 patients i.e. 85%. The difference was not found to be statistically significant (chi square=0.35) although there clearly is a trend towards better success rates in the older age group.

DISCUSSION

Hydrocephalus may develop either due to decreased CSF absorption or due to excessive production. They may be congenital or acquired. Congenital causes include chiari 2 malformations associated with

meningimyelocoles, chiari type-1 malformation due to 4th ventricular outlet obstruction; primary aqueductal stenosis; secondary aqueductal gliosis or dandy walker malformations. Acquired causes include – infections- post meningitis, cysticercosis, post hemorrhagic; secondary to masses- vascular malformations or neoplastic; or may be associated with spinal tumours.^{2,3,4}

Management of hydrocephalus established is primarily surgical, medical management being limited to diuretic therapy to buy time for surgery. Surgery should aim at maximizing neurological improvement rather than trying to obtain normal sized ventricles. Endoscopic third ventriculostomy has found success in relieving certain kinds of hydrocephalus and has the advantage of not leaving any hardware in situ.

The failure rate of ETV has been found to be higher in infants less than 90 days and in those with meningimyelocoele.

In our study, 9 patients (21.4%) showed signs of ETV failure and had to be taken up for shunt surgery. Kulkarni et. Al. found lower risk of ETV failure right from the early postoperative period, which become even more favourable with time. Mohanty et al reported 6-15% ETV failure due to re-closure of the stoma from gliosis. They reported ETV failure in 13 of which 8 were infants.⁵

In our study, intraoperative complications were found in 3 of 42 (7.1%) mainly bleeding. Ersahin et. Al. have found low intraoperative complications rates in ETV.⁶

CONCLUSIONS

Infants in aqueductal stenosis, ETV has acceptable chance of success and lower complications rates, with trend towards better outcomes in older age groups.

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