

Hydrocephalus Ventriculo Peritoneal Shunt Experience At Sir Ganga Ram Hospital, Lahore

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Sixty patients of hydrocephalus were treated with Ventriculo-Peritoneal shunt (VP) over a period of 4 years (1993-97) at Sir Ganga Ram Hospital, Lahore. There were 50 children and 10 adult patients. Among children the commonest cause of hydrocephalus was congenital idiopathic variety (38%), while in adults major cause of hydrocephalus was subarachnoid haemorrhage. Other less common causes included posterior fossae tumors, hydrocephalus associated with myelomeningocele and Dandy-Walker syndrome. The shunt surgery was performed in all patients, and the results were satisfactory. Incidence of complications was low. Shunt was blocked in 3.3% patients (which necessitated revision), wound dehiscence occurred in 6.7% cases, allergic skin reaction to silicone in 3.3% cases, and penetration of bowel in a single patient. There was a single mortality died. These results speak for safety of shunt surgery in hydrocephalic patients, both adults as well as children.

KEY WORDS: Hydrocephalus, ventriculo-peritoneal shunt, complications.

There is no effective medical treatment for hydrocephalus. Since the first operation for hydrocephalus by Dandy (Third ventriculostomy in 1922) many ingenious operations have been described only, mechanical bypass of cerebrospinal fluid has been in one form or the other. In this study, we evaluated the efficacy and performance of Ventriculo-Peritoneal (V.P shunt)

Material And Method

This prospective study was done in Sir Ganga Ram Hospital, Lahore over a period of four years (1993-97). Both children and adults were included in this study. Majorities of children were referred from Department of Pediatrics, Sir Ganga Ram Hospital, Lahore.

The diagnosis of hydrocephalus was made from history and clinical examination and confirmed either by ultrasonography (USG) of brain (if anterior fontanelle was open) or computerized tomographic (CT) scan of brain.

The VP shunt was put in all cases. We used Pudenz's shunt in 95.1% cases, Bhatti's medium pressure shunt in 3.3% and Holter's medium pressure shunt in one case (1.6%). The operation was performed according to standard technique. All patients received antibiotics and steroids pre-operatively which were continued 3-4 days post-operatively.

Patients with infected cerebrospinal fluids (CSF) were treated with appropriate antibiotics before undergoing surgery, until the CSF was clear. Some patients needed external ventricular drainage of CSF. Post operatively other specific therapy like antituberculous agents or anti biotic therapy was continued.

Results

There were total 60 patients. Male to female ratio was 2:3 and age ranged from 4 days to sixty years. There were fifty children and ten adult patients. Among children the commonest cause of hydrocephalus was congenital idiopathic variety (38.3%) followed by post infective

variety (30%) while in adults commonest cause was subarachnoid haemorrhage (10%). Other less common causes included posterior fossa tumours (6.7%) and hydrocephalus associated with myelomeningocele (11.7%) and Dandy-Walker Syndrome (3.3%). Pudenz's shunt was used in (3.3%) and Holder's medium pressure shunt in one case (1.6%)

Table-1 Causes of hydrocephalus

Causes	n=	%age
Congenital	23	38.3
Post infective	18	30.0
PostSubarachnoid haemorrhage(S.A.H)	06	10.0
Associated Myelomeningocele	07	11.7
Posterior fossa tumour	04	06.7
Dandy Walker syndrome	2	3.3

Table-2 Types of shunt.

Pudenz's shunt	95.1%
Bhatti shunt	3.3%
Holter's shunt	1.6%

Table-3: Complications of V.P. Shunt Surgery

Complications of V.P Shunt Surgery	No. of patients	%age
Congenital	23	38.3
Post infective	18	30.0
PostSubarachnoid haemorrhage(S.A.H)	6	10.0
Associated Myelomeningocele	7	11.7
Posterior fossa tumour	4	6.7
Dandy Walker syndrome	2	3.3

Incidence of complications was low. Superficial wound infection occurred in three patients (5%), which was treated successfully with appropriate antibiotics and shunt was not taken out. Wound dehiscence occurred in four patients (6.7%) and reaction to silicone catheter occurred

in two patients (3.3%). Shunt was blocked in two patients (3.3%) which necessitated revision. One patient had an unusual complication of penetration of bowel and catheter came out of the anus. He underwent laparotomy with closure of perforation and change of peritoneal catheter. A young infant with Dandy-Walker syndrome never recovered from anaesthesia and died on 4th post operative day. These results are summarized in following tables 2&3.

Discussion:

Among 60 patients of hydrocephalus who were operated, children formed 80% population. Male to female was 2:3. Commonest causes in children were congenital idiopathic variety (38%), followed by post-infective variety (30%). The commonest cause in adults was subarachnoid haemorrhage. The shunt surgery was performed in all cases and incidence of complications was low. Blockade of shunt occurred in 2 cases which necessitated revision, followed by wound dehiscence (6.7%), allergic skin reaction to silicone (3.3%) and penetration of intestine (1.6%).

We found 3 commonest causes of hydrocephalus in our study, congenital idiopathic (38%) and post infective (3%) in children and SAH (30%) among adults. Duplessis et al⁸ in their study of 46 cases, could find infective cause of hydrocephalus only in 5% of the cases, 2% were due to SAH and tumours comprised 20%. Comparing with Duplessis's the incidence of post-infective hydrocephalus was much higher in our study.

Shunt surgery by and large is safe and results are excellent. There are certain factors which determine the outcome of shunt surgery; like selection of cases, selection of shunt device, aetiology of hydrocephalus and technical expertise. Lund Johanson⁴ discussed these factors in detail and concluded that shunt complications and infections were high in operations done by trainee surgeons. Di-Rocco⁵ et al. had same conclusion from their study and added that choice of shunt device was less important as regards incidence of complications. However, Borgbjerg¹ et al. demonstrated that complications were higher with Pudenz's shunt. In our study all patients were operated by consultant Neurosurgeon and Pudenz's shunt was used in 95.1% cases. Shunt device was less important prognostic factor for complications.

Rate of infection was almost the same as in other studies except Larson et al⁷ who had 19% infection rate. Revision of shunt is far less common in our study as compared to other authors except Chaudhry et al⁹ who

had 2.5% revision rate. Results of different studies are summarized in following table.

Table-4: Comparison of different studies

Name of Study	Rate of Infection	Rate of Revision
Borgbjerg et al. (1)	7.4%	45%
Lund Johansen et al. (4)	-	25%
Larson et al. (7)	19%	31%
Chaudhry - A.R (5)	25%	25%
Vara Thorbeck-R (10)	9.1%	-
Choux - M et al. (6)	5-15%	-
Present Study	6.7%	3.3%

To keep complications to a minimum, it is recommended that VP shunt Surgery be either performed by an experienced surgeon or at least he should supervise the trainee surgeons undertaking this procedure.

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