

Ventriculoperitoneal Shunt in Post Tubercular Hydrocephalus

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Prior to the availability of effective therapy, tubercular meningitis was invariably fatal with most of the deaths occurring within weeks of initial presentation. Although antimicrobial agents have improved the survival rates, serious sequelae are still common. With the advent of CT scan, hydrocephalus can be diagnosed early and neurosurgical intervention can improve the outcome in such subjects. This manuscript presents our experience with ventriculoperitoneal shunt (VP) in tubercular meningitis (TBM).

Subjects and Results

A retrospective analysis of 140 children (106 male, 34 female) who underwent VP shunt for hydrocephalus was done. TBM was stratified as Grades I-IV according to earlier criteria(1). Most of the subjects [133 (95%)]. were either in Grade III or IV. All of them were on anti tubercular drugs and decongestants and had not shown any improvement in neurological status with this therapy. The criteria for performing VP Shunt were-CSF polymorphs less than 5, CSF protein less than 100 mg/dl with evidence of hydrocephalus on CT scan irrespective of the number of CSF

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lymphocytes. Periventricular edema on CT scan Grades I and II. Out of 140 children, 44.2% were in the age group 1-4 years. Post VP shunt improvement in sensorium was observed in 19/26 (73.1%); papilledema/optic atrophy improved in 50% cases and there was a little improvement in decerebration in 30/87 subjects (34.5%) (Table I). Outcome was best (100%) with Grades I and II. Out of 46 children in Grade III, 29 (60.3%) showed improvement and there was reversal to Grades II and I in 13 and 16 patients, respectively. Grade IV had bad outcome with only 34.5% improvement. Among the Grade IV, 6 patients showed reversal to Grade III, 22 to Grade II and 2 to Grade (Table II). Fourteen children (10%) died after surgery; all of them belonged to Grade IV.

Discussion

It is stated that hydrocephalus is nearly always present in all who have had TBM for more than 4 to 6 weeks of duration (2,3). Most of the referred children at our center are already in Grades III and IV and

TABLE I—Indications and Improvement

Indications*	Total	Post shunt Improve ment	Percentage
Decerebration	87	30	34.5
Decreased level of consciousness	26	19	73.1
Papilledema/ atrophy	20	10	50.0
Elective (Grades I & II)	7	7	100

* Several patients had more than one indication therefore the symptom which in itself alone would form an indication for shunt surgery was taken into account.

TABLE II—Grade Reversal Following Shunt

Pre-shunt Grade	Total No.	Improvement	Post III	Shunt II	Grade I	Died	No Improvement
I & II	7	7 (100%)	—	—	—	Nil	Nil
III	46	29 (60.3%)	—	13	16	Nil	17
IV	87	30 (34.5%)	6	22	2	14	43

on antitubercular treatment and decongestants for a variable period of time without improvement. The results were relatively poor in such subjects. In contrast, in Grades I and II with hydrocephalus on CT, the outcome was better with shunt surgery.

It is strongly advocated that an early shunt be in done Grades III and IV for better recovery. Once ventriculomegaly sets in, surgical drainage of CSF is the only effective way of reducing intracranial pressure. Medical treatment of ventriculomegaly with decongestant should be avoided as it prolongs and prevents overall recovery. Subjects who can not be shunted for various reasons should have ventricular tap to drain the CSF till the conditions are favorable for shunt placement. During the management of TBM, symptomatic hydrocephalus in Grades I and II is likely to change into higher grades. Therefore, indication of putting shunt should also consider symptoms and signs rather than grading alone. Similarly improvement following shunt should also be considered in terms of symptomatic benefit rather than grade reversal. Decerebration, the symptom of Grade IV TBM, responded the least (30%) as compared to 73% recovery in altered sensorium, a symptom of Grade III. It is, therefore suggested that altered sensorium (Grade III) is a better stage to put the shunt rather than waiting for decerebration (Grade IV) to appear. Grades III and IV had 60.3% and 34.48% recovery,

respectively. Seventy four (52.8%) patients did not show any improvement after surgery and this could be due to various other factors related to Grades III and IV of TBM. The mortality of 10% in our series was comparable to other studies(4,5).

The present study highlights the role of early diagnosis and timely intervention for hydrocephalus in TBM for better outcome. With greater access of CT scan, an early diagnosis of hydrocephalus has become easier. However, it should be remembered that like any other surgery VP shunt also has got its own complications.

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