ORIGINAL ARTICLE

To evaluate the outcome of lumboperitoneal shunt in the treatment of idiopathic intracranial hypertension

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Abstract

Objective: To analyze the Outcome of Lumboperitoneal shunt in the treatment of Idiopathic intracranial hypertension.

Material and Methods: This is a case series study of 12 patients conducted in Neurosurgery B unit Lady reading Hospital, Peshawar from March 2015 to March 2017. Clinical, imaging, and CSF manometry evaluation were performed for all the patients. Patients who met the criteria of idiopathic intracranial hypertension and those who didn't respond to medical treatment and repeated CSF withdrawal were included while those with hydrocephalus were excluded. A preformed proforma that included age, gender, CSF pressure, weight, height, was recorded.

Results: Out of the total 12 patients, 11 were females and 1 male. Most common age group was 25-45 years (10). 9 patients presented with some impairment of vision whereas 2 patients had perception of light only. 10 patients had severe headache. Opening csf pressure of more than 40 cm H_2O was present in 9 patients. Headache resolved in all patients post-operatively. 8 out of the 9 patients with some impairment of vision showed improvement of vision and papilledema. Post-operative complications included infection in 1 of the patients. Rebound headache occurred in 1 patient on 2 weeks follow-up. No rebound of symptoms was noted at 1 and 3 months follow-ups.

Conclusion: lumboperitoneal shunt is effective, safe and vision saving procedure in the treatment of idiopahtic intracranial hypertension, if done early. This procedure relieves both symptoms of vision and headache.

Keywords: Idiopathic intracranial hypertension, hydrocephalus, Cerebro spinal fluid (CSF), lumboperitoneal shunt, headache, impairment of vision, papilledema

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Introduction:

Idiopathic intracranial hypertension is a condition defined by elevated intracranial pressure without discernible etiology, with normal cerebrospinal fluid content, a normal brain with normal or small ventricles seen on imaging studies, and normal results of neurologic examination except for abducens nerve palsy.[1,2] Idiopathic intracranial hypertension is the disease condition that is associated to intracranial pressure without any obvious pathological condition of brain and venous thrombosis.[3,4] Till date, the exact cause of idiopahtic intracranial hypertension is still unknown; however it has been associated to various medications including hypervitaminosis-A, antibiotics (tetracycline, minocycline, nalidixic acid, sulfa drugs and fluoroquinolones etc.), hormonal medications of contraceptives and growth hormones, corticosteroids and lithium toxicity etc.

Most common clinical signs associated with idiopahtic intracranial hypertension are vision loss due to papilledema and persistent headache, whereas diplopia, numbness, neck shoulder and arm pain, in coordination, weakness, dizziness, abducens and facial palsy have also been reported either individually or in combination as symptoms of idiopahtic intracranial hypertension. Diagnosis of idiopathic intracranial

hypertension is a process of exclusion depending on clinical symptoms and neurological and Ophthalmological data, as well as imaging and CSF studies. Various methods have been developed to characterize idiopahtic intracranial hypertension, among these dandy criteria has been considered as most standard and widely applied modality. A patient with symptoms of increased intracranial pressure, normal brain imaging reports with no or pseudo neurological signs, normal csf findings and intracranial pressure of more than 250mm H_2O and no obviously diagnosed cause of intracranial pressure. The patient presented with aforementioned symptoms and findings can be declared with idiopahtic intracranial hypertension.

The disease reflects a non-fatal course; however, it can disrupt normal life and cause significant visual failure.[2,5] It has been reported that individuals with higher body mass index i.e. Obese are more prone to disease than normal ones. Similarly, the disease incidence ratio is higher in female as compare to male individuals. The prevalence in women is 1/100,000 presented cases, however it is increased to 13 cases per 100,000 cases at the age ranging between 20-44 year accompanied by 10% increased body weight above ideal body mass index. Idiopathic intracranial hypertension can also be associated to various diseases including systemic lupus, addison's disease, thyroid defects, anemia and uremia. In addition the thrombus based venous obstruction due to various factors has also been associated to idiopahtic intracranial hypertension and intracranial hypertension.

Treatment options include medical and surgical modalities.[6,7] Currently, patients are often treated medically. Acetazolamide and corticosteroids have been used as first line of treatment of papilledema associated with idiopahtic intracranial hypertension. Surgical treatment is reserved for patients with severe and acute visual loss at initial presentation or in whom medical management has failed, i.e., those with intractable headache or a persistent visual deficit.[8-10]

Surgical treatment includes csf diversion procedures most commonly lumbo peritoneal (LP) shunt as well as optic nerve sheath fenestration.[8,9,11] LP shunt addresses the cause of both headache and papilledema more directly by effecting a global reduction of intracranial pressure. However, despite its effectiveness in the early stages of idiopahtic intracranial hypertension, LP shunt failure often occurs and it may require multiple revisions in some patients. Reasons for LP shunt revision include shunt obstruction, low intracranial pressure headache, lumbar radiculopathy, abdominal pain, and infection.[12] Each treatment modality has its own merits and demerits.

Material and Methods:

This is a case series study. It was conducted in neurosurgery B unit Lady Reading Hospital, Peshawar. It is one of the oldest tertiary care hospital and has the highest patient turnover among all the hospitals in the province (KPK).

Duration of study was 2 years from march 2015 to march 2017. The study includes 12 patients.

Before inclusion in our study, all the patients were considered for clinical examination, radiological imaging and CSF evaluation. Besides clinical examination for exclusion of other causes, two of the main components of physical examination were measurement of headache and visual acuity. For measuring headache, we used pain analogue scale (PAS). Purpose of visual acuity was to check visual impairment in the patients. Radiological examination mainly included CT scan and mri to look for signs of hydrocephalus and check ventricular dilatation. Lumbar puncture was done for csf evaluation and at the same time CSF manometry was also performed. Measurement of opening csf pressure was done through a plastic tube column, which is used as a dripset. Column height was measured in centimeters. It is the commonly used local method for measuring opening CSF pressure.

Inclusion criteria: all those patients who meet modified dandy's criteria and those who didn't respond to medical treatment and repeated CSF

withdrawal; were included in our study.

Exclusion criteria: all those patients who were diagnosed with hydrocephalus were excluded.

A pre-structured proforma was used, which included age, gender, CSF pressure, weight and height. The same proforma was used during follow-ups.

Besides baseline measurements; measurements were also taken after surgery. Patients are usually discharged on 2nd – 3rd post-operative day. Then follow up measurements were taken at 1 month & 3 months or any period in between; if the patient developed complications. In clinical practice, the main purpose of follow up is to check shunt malfunction which might include blockade or displacement of shunt. In most of the situations, if there is shunt malfunction; then patient will come for follow-up without waiting for the time indicated for regular follow up. In case there is shunt malfunction, there reversal of signs & symptoms of intracranial hypertension.

Results:

Out of the total 12 patients, 11 were females and 1 male. Most common age group was 25-45 years (10). 41% of patients (5) were overweight (bmi> 25) while remaining had bmi of 18-25. 1 patient had already undergone optic nerve fenestration. His vision symptoms were relieved while there was no improvement in headache symptoms. 9 patients presented with some impairment of vision (less than 6/6) whereas 2 patients had perception of light only. 10 patients had severe headache. Opening CSF pressure of more than 40cm H_2O was present in 9 patients; while remaining had opening CSF of 20-40.

Headache resolved in all patients post-operatively. Out of the 9 patients with some impairment of vision 8 patients showed improvement of vision and papilledema while 1 patient was static post-operatively. 2 patients who presented with perception of light prior to surgery remained only perceptive to light post-operatively.

Post-operative complications included infection in 1 of the patients. One of the reasons for infection was shunt blockade in the same patient. She was an obese female with BMI of 35. Probably shunt manipulation intraoperatively was the reason for shunt blockade.

Rebound headache occurred in 1 patient on 2 weeks follow-up due to shunt blockade. Some visual impairment had also occurred in the same patient.

No rebound of symptoms was noted at 1 and 3 months follow-ups. After 1 month, loss follow-up was 2 patients. After 3 months, loss to follow-up was 4 out of 12. Those patients who were loss to follow-up were female patients and were asymptomatic post-operatively.

Discussion:

In our study most common presenting gender was female. Most common age group was 25-45 years. About half of the patients were overweight.In most of the patients, opening CSF pressure was more than 40 cm of H_2O. The finding of fulminant CSF pressure is consistent with other studies.[13] Most of the patients presented with some impairment of vision. Most of them showed improvement of vision and papilledema; after the surgical procedure. The finding of fulminant CSF pressure is consistent with other studies.[13] Headache resolved in all patients post-operatively. Rebound headache occurred in only one of the patients. Main reason was shunt blockade at 2 weeks post-operatively; resulting in some visual impairment too. Due to shorter follow-up period, our finding was consistent with other studies showing that short-term complications within 1 yearare more likely to be influenced by shunt-associated factors.[14] Post-operative complications included infection in only one of the patients. The finding is consistent with other studies.[13] Main reason was shunt blockade. Risk factors of obesity and female gender were present. As found in other studies, obstruction was the most common complication.[12]

Conclusion:
Lumbo-peritoneal shunt is effective, safe and vision saving procedure in the treatment of idiopahtic intracranial hypertension, if done early. This procedure relieves both symptoms of vision and headache.

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Dr Muhammd Khalid Anwar Khan Khanzada, literature review and wrote the initial write-up.

Dr Sajjad Ullah, data collection and discussion writing

Dr Usman Haqqani, data collection and discussion writing

Dr Yousaf Ali, data entry and statistical work

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