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Research Article

**COMPLICATIONS OF VENTRICULOPERITONEAL (VP)
SHUNT IN PEDIATRIC AGE GROUP**¹Zainul Abi Din, ²Salman Khaliq, ²Mariya Zehra¹Sheikh Zayed hospital Rahim Yar Khan²Mayo Hospital Lahore**Abstract:**

Objective: To determine the complications of VP shunt in paediatric age group.

Methodology: This was a descriptive case series conducted at Department of Paediatric surgery, Lahore General Hospital, Lahore during January to December 2017. In this study 100 cases of age less than 12 years were included irrespective of gender who underwent VP shunting in the last 6 months. The cases with end stage liver, cardiac or renal failure were excluded. The children with any immune compromised state were also excluded. These were assessed and followed for 6 months to look for any complication. Final outcome was seen at 6 months and types of complications were noted and managed accordingly.

Results: In the present study there were total 100 cases included with a mean age of 2.45 ± 3.17 years. There were 62 (62%) males and 38 (38%) females in the present study. The complications were seen in 40 (40%) of the cases. There were few cases with overlapping of more than 1 complication. The most common complication was seizures seen in 33 (33%) of the cases followed by shunt blockage seen in 23 (23%) of the cases. Abscess formation of local infection was seen in 8 (8%) of the cases followed by CSF leak and shunt dislocation seen in 4% each. Mortality was seen in 9 (9%) of the cases.

Conclusion: Shunt related complications are common in VP shunt and the seizure and shunts blockage are the most common complications encountered.

Key words: VP shunt, Blockage, Seizure.

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INTRODUCTION:

Hydrocephalus is considered as one of the highly morbid condition in the neurology departments and can be fata in extremes of ages especially paediatric population. It can be sub divided into two major types communicative and non communicative hydrocephalus. The basic underlying pathophysiology is the impairment in the CSF flow either due to blockage or obstruction in the re absorption [1].

It can present in various ways depending upon the age of the patient, size of the hydrocephalus and rate of its development along with the underlying medical condition leading to its development. The primary treatment of choice is the alternate path to drain the obstructed fluid. Ventriculo-peritoneal (VP) shunt, ventriculo-atrial shunt (VA) are the mostly deployed techniques and among them VP shunt placement is the most common procedure [2,3].

Ventriculo-peritoneal (VP) shunt can lead to different complications which can be either due to mechanical damage or can be infective in nature. Mechanical complications can be shunt blockage, shunt displacement, hydrocele, pseudo cyst, perforation of viscus, intestinal volvulus and perforation, sub dural collection, craniosyostosis, and seizures. Infective side effects include surgical site infections, abscess formation, ventriculitis or necrosis of the overlying skin [4,5].

OBJECTIVE:

To determine the complications of VP shunt in paediatric age group.

METHODOLOGY:**Study settings;**

Descriptive case series study.

Study site;

Department of Paediatric surgery, Lahore General Hospital, Lahore

Study time;

January 2017 to December 2017

Sampling technique;

Non probability-consecutive sampling

In this study 100 cases of age less than 12 years were included irrespective of gender who underwent VP shunting in the last 6 months. The cases with end stage liver, cardiac or renal failure were excluded. The children with any immune compromised state were also excluded. These were assessed and followed for 6 months to look for any complication. Final outcome was seen at 6 months and types of complications were noted and managed accordingly.

Statistical analysis;

The data was entered and assessed by SPSS version 23. The qualitative variables were presented in terms of frequency and percentages while quantitative data as mean and standard deviation.

RESULTS:

In the present study there were total 100 cases included with a mean age of 2.45 ± 3.17 years. There were 62 (62%) males and 38 (38%) females in the present study as shown in table 01. The complications were seen in 40 (40%) of the cases as shown in figure 01. There were few cases with overlapping of more than 1 complication. The most common complication was seizures seen in 33 (33%) of the cases followed by shunt blockage seen in 23 (23%) of the cases. Abscess formation of local infection was seen in 8 (8%) of the cases followed by CSF leak and shunt dislocation seen in 4% each. Mortality was seen in 9 (9%) of the cases as displayed in table 02.

Table No 01. Demographics of study subjects

	Mean	Range
Age (years)	2.45±3.17	1 month-6 years
Duration of shunt till complication (days)	15.75±7.89	53-113
Gender	Number	%
Male	62	62%
Female	38	38%

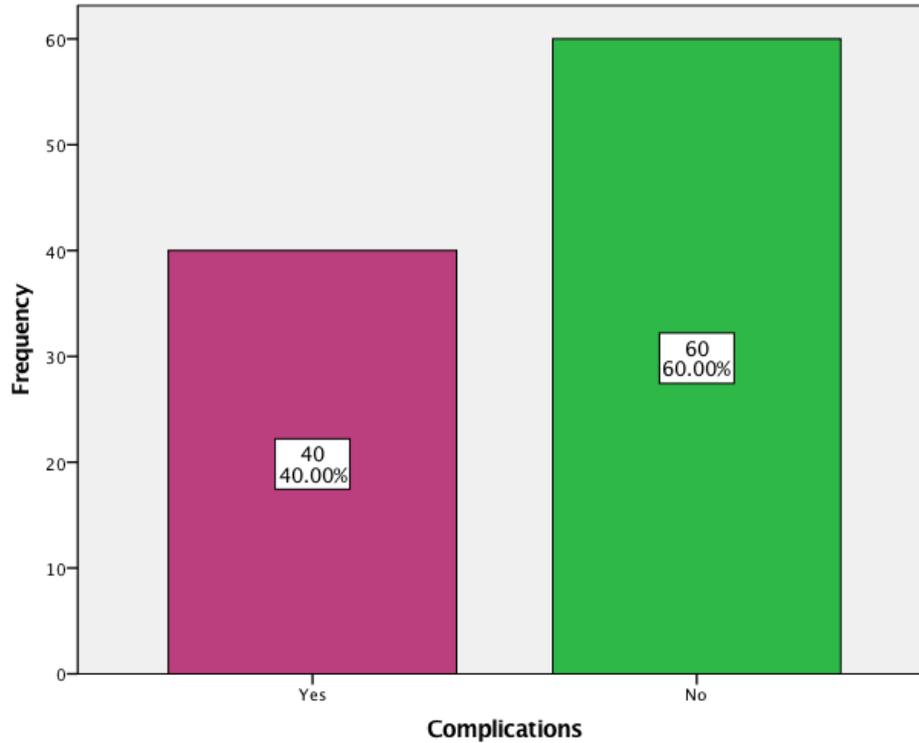


Figure No 01. Complications

Table No 02. Type of complications

Complications	Number	Percentage
Seizures	33	33%
Shunt blockage	23	23%
Abscess formation	8	8%
Shunt dislocation	4	4%
CSF leak	4	4%
Ventriculitis	3	3%
Scrotal swelling	1	1%
Mortality	9	9%

DISCUSSION:

Hydrocephalus can be fatal and needs the drainage of CSF for definitive management and VP shunt is the most commonly done management in such cases globally. It can be placed for long duration of time and hence the chances of any complication associated with this are also common during the whole length of time.

In the present study, the most common complication was seizures seen in 33 (33%) of the cases followed by shunt blockage seen in 23 (23%) of the cases. This finding was similar to the study done by Kinasha et al

they found shunt blockage in 32% of the cases [5]

while in another study done by Lee et al shunt blockage was seen in 12.2% of the cases [6]. Di Rocco et al in another study stratified different variables and it was seen that the shunt blockage was seen in cases that were too young and the age at placement of shunt was less than 6 months [2]. This was also supported by the studies done by Piatt and Calson et al where they found this in cases that had age less than 2 years [3]. Liptak et al also found young age as most susceptible and it was seen in

cases that were less than 1 year of age. [4]. The mean age in the present study was 2.45 ± 3.17 years and it was similar to the all above mentioned studies.³⁻⁶

Surgical site infection and or abscess formation was seen in 8% of the cases. Globally the incidence of shunt related infection was seen in 5 to 8% in English literature [1]. In a study done by Agarwal N *et al* in India found this in 15.63% of cases. Hence revealed a better wound care in the present study [7]. Similar findings were seen in the study by Kinasha *et al.* with 32% shunt blockage and 24.6% infection [5], whereas, Lee *et al*⁶ had 12.2% shunt blockage and 4.1% infection.⁵ Peacock and Curren in their study found a shunt blockage rate of 20%. [8]. Further they stratified that 51.21% of cases presented within 2 years of shunt placement [8]. On literature review, event-free survival at 1 year ranged from 62% to 80% and at 10 years from 35% to 48%. [9-11].

In the present study the mortality was seen in 9 (9%) of the cases. This was a little lower to the studies done by Kinasha *et al* [5] where they found it in 20% of the cases. The data from the developed countries have shown mortality rate of around 8.6% to 13.7% of cases. The difference in data was wide variable due to difference in the follow up periods [12,13].

CONCLUSION:

Shunt related complications are common in VP shunt and the seizure and shunts blockage are the most common complications encountered.

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