Study of 100 Consecutive Cases of Hydrocephalus Managed at Lahore General Hospital

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Hydrocephalus is defined as an excessive accumulation of cerebrospinal fluid within the ventricular system . It is a common problem amongst the paediatric neurosurgical patients but also seen in adult patients sparingly .In this prospective study , 100 consecutive patients of all age groups and with all types of hydrocephalus are included . Hydrocephalus can be congenital or acquired . This study showed that 55 % of the patients were of congenital variety while the remaining 45 % were of acquired variety . The incidence of associated anomalies in congenital hydrocephalus was 43.6 % ,spinal dysraphism being the commonest (30.9 %) .In patients with acquired hydrocephalus the majority of patients were post-meningitic (25 %) and those with brain tumours (9 %). These results are discussed in detail and compared with other studies on this topic .
Key words : Hydrocephalus , Congenital , Acquired , Neoplastic .

Hydrocephalus is defined as an excessive accumulation of cerebrospinal fluid(CSF) within the ventricular system. This can lead to an elevation of intra-cranial pressure(ICP)[1].

Hydrocephalus may be congenital or acquired, Congenital hydrocephalus occurs in approximately one per thousand live births. The cause is not known in the majority of cases. The most common pathological finding in congenital hydrocephalus is aqueduct stenosis. Congenital atresia of the foramen of Luschka and Magendie may be associated with Dandy-Walker cyst. Sometimes congenital cysts , tumours or vascular malformations may be the cause of hydrocephalus[1,2,3].The acquired hydrocephalus may be caused by tumours, infections and subarachnoid haemorrhage.

Material and methods

This study includes 100 consecutive patients with hydrocephalus who were admitted in the Department of Neurosurgery , Lahore General Hospital, Lahore. No patient was excluded from the study during the study period (January, 1993 to December, 1993) .

To ascertain the underlying aetiological factors , This assessment included a detailed history, clinical examination and appropriate investigations

The specific investigations in these patients included:

- Skull X-rays (Fig. 1)
- CT scan brain in all patients to determine the underlying cause such as tumour haemorrhage etc.(Fig. 2)
- CSF examination in relevant cases (post-infective and post-traumatic) for cell count , glucose and protein levels .

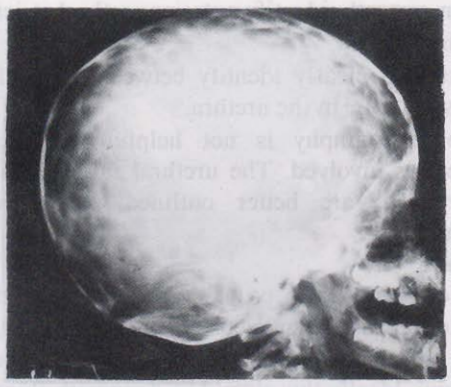

Figure 1: X ray skull showing "Beaten Silver" appearance due to chronically raiosed ICP in hydrocephalusa

Results

Out of 100 patients, 55 were of congenital variety and 45 were of acquired variety . The overall incidence of causative factors has been shown in table 1

Table 1 Aetiology

Aetiology	n=	%age
Congenital	55	55
Post-meningitic	25	25
Neoplastic	9	9
Post-traumatic	8	8
Subarachnoid haemorrhage	1	1
Unknown	2	2
Total	100	

Table 2 Associated anomalies with congenital hydrocephalus (n=55)

Congenital Anomaly	n=	%age
Meningocele	17	30.9
Arachnoid cyst	3	5.5
Dandy-Walker cyst	1	1.8
Imperforate anus	1	1.8
Talipes Equinovarus	2	3.6
Nil	31	56.4

In the neoplastic group of 9 patients, 8 had posterior fossa tumour and 1 had a craniopharyngioma . On further analysis it was found that out of 55 cases of congenital hydrocephalus, 24 had associated other congenital anomalies(table 1,2).

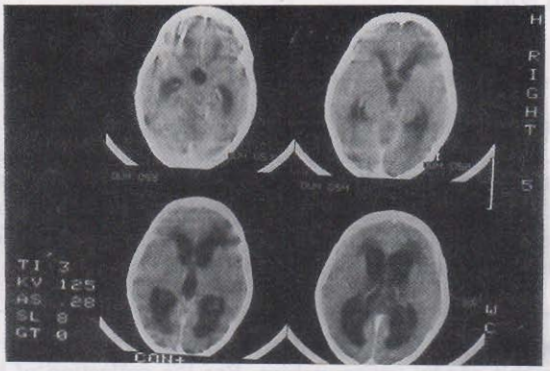

Figure 2: C.T scan of brain showing detailed ventricles due to hydrocephalus

Discussion

Determination of underlying cause and its proper treatment , should be the aim in the management of these patients .In this study 55% patients were of congenital variety while in a study by Elawad it was 73.7%. Post-meningitic cases in our study were 25% while in the study mentioned above it was 11.9%[4].

In the neoplastic group, 88.9% of the patients had a posterior fossa tumour while in 11.1% it was a craniopharyngioma. Posterior fossa tumours are almost always associated with hydrocephalus . In a study by Taylor W.A.S. et.al hydrocephalus was present in 81 % of cases. Tumours within the fourth ventricle and of cerebellar hemisphere had the highest incidence of 96%[5]. In a study by Rizwan , hydrocephalus was present in 84 % cases of posterior fossa tumours[6].

Some rare causes of hydrocephalus have also been reported . A report from Japan mentions mumps as a cause of acute aqueduct stenosis resulting in hydrocephalus[7]. Benign intrinsic tectal tumours also cause hydrocephalus[8] A giant posterior communicating artery aneurysm presented as third ventricular mass causing obstructive hydrocephalus. Cerebral angiography showed partially thrombosed giant posterior communicating artery aneurysm on right side[9].

Another case from Japan has been reported in which an intraventricular calculus caused acute obstructive hydrocephalus. It impacted in the aqueduct but its nature and origin was not determined[10] . Hirano H.,et al. have reported a case of villous hypertrophy of the choroid plexus of lateral ventricles as a cause of hydrocephalus. An associated Dandy-Walker cyst was also present Hydrocephalus was not relieved by shunting so choroid plexus had to be resected[11] .

A very rare and unique cause of acute obstructive hydrocephalus has been reported in a patient with non-ketotic hyperosmolar diabetic coma. The cause is said to be the hyperosmolality causing osmotic endothelial injury leading to brain stem oedema[12] In another study by Mezzadri, J.J.M., et al, the association of obstructive hydrocephalus with spontaneous cerebellar haemorrhage has been analysed . Obstructive hydrocephalus was present in 64 % of his cases . The outcome depends upon early and efficient treatment of hydrocephalus[13] .

As regards associated anomalies in congenital hydrocephalus , spinal dysraphism was noted in 30.9% cases, Dandy-Walker cyst in 1.8 % and an arachnoid cyst in 5.45 %. In a study by Mansoor spinal dysraphism was present in 17 % while a Dandy-Walker cyst in 3%[14] . Another study showed an incidence of dysraphism as 39.3 % and that of Dandy-Walker cyst as 8.2 %[15]

Conclusion

We conclude that hydrocephalus is the commonest problem amongst the paediatric neurosurgical patients. 55% patients were of congenital variety while 45% were of acquired variety. Amongst the neoplastic group 88.9 % patients had a posterior fossa tumour causing obstructive hydrocephalus. An associated congenital anomaly was found in 43.6 % patients with congenital hydrocephalus , spinal dysraphism being the commonest (30.9 %)

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