

Management And Outcome Analysis Of Pediatric Extradural Hematoma

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I. Introduction

Head injury continues to be a nightmare not only for public but also for the neurosurgeon, because of high morbidity and mortality. Outcome prediction has always been an area of significant interest since it helps in determining prognosis, modulating treatment and asserting triage. Along with diagnosis and treatment, clinicians have to bear the responsibility of determining prognosis in the management of head injury patients. This is especially true after a traumatic brain injury, when uncertainty about the future compounds the suffering already being experienced by the families^{1,2,3,4}.

Aims And Objectives:

1. Clinical audit of paediatric patients with EDH and its management.
2. To analyze the outcome to find out the factors associated with prognosis.

II. Material And Methods

1. Detailed history , clinical and neurological examinations
2. Investigations like NCCT Brain ,x-ray cs spine
3. Management surgical /conservative

III. Result And Discussion:

Table 1- Patients distribution (n=104)

S.No.	Status	No.	Percentage
1.	Total number of patients enrolled	104	100
2.	Patients discharged	78	75
3.	Patients expired	13	12.5
4.	Patients absconded	13	12.5

TABLE:-2 Age wise distribution of Patients (n=104)

S.No.	Age group	No.	Percentage
1.	<3 years	5	4.8
2.	3-5 years	14	13.5
3.	6-11 years	36	34.6
4.	12-18 years	49	47.1

TABLE:-3 Site of EDH

Site of EDH	Number of patients
Frontal (F)	30
Fronto-temporal (FT)	5
Temporal (T)	5
Temporo-parietal (TP)	34
Parietal (P)	19
Fronto-temporo-parietal (FTP)	3
Fronto-parietal (FP)	2
Parieto-occipital (PO)	3
Fronto-parieto-occipital (FPO)	1
Posterior fossa (Post fossa)	2
	104

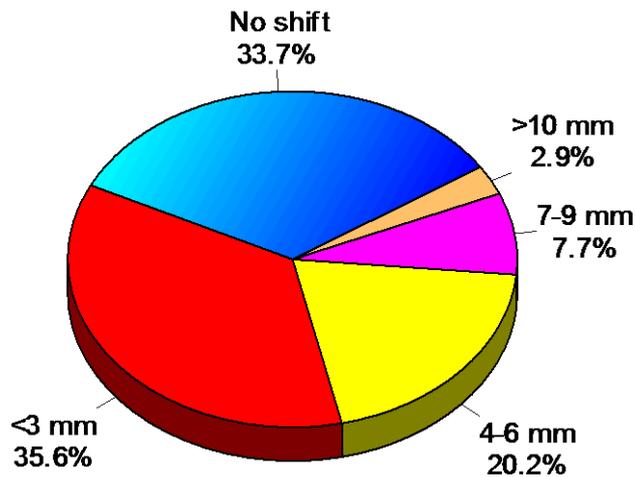
Most common site of EDH in our study was frontal region (36) followed by temporo parietal region (33).

Table 4: Distribution of Patients according to Volume of EDH

S.No.	Volume	No.	Percentage
1.	<15 ml	35	34
2.	15-19 ml	14	13
3.	20-24 ml	31	30
4.	25-29 ml	13	12.5
5.	≥30 ml	11	10.6

Table 5: Midline Shift (n=104)

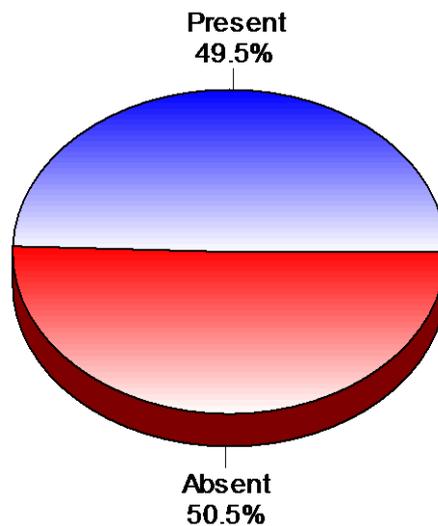
S.No.	Midline Shift	No.	Percentage
1.	No shift	35	33.7
2.	≤3 mm	37	35.6
3.	4-6 mm	21	20.2
4.	7-9 mm	8	7.7
5.	≥10 mm	3	2.9



No midline shift was noted in 35 (33.7%) patients. Among those where midline shift was noted, maximum (n=37; 35.6%) had a midline shift ≤3 mm. In 21 (20.2%) cases the midline shift was 4-6 mm while in 8 (7.7%) it was between 7 to 9 mm. There were 3 (2.9%) cases with a midline shift above 10 mm.

Table 6: Associated Cranial Fractures

	No. of patients	Percentage
Present	51	49.03
Absent	53	50.06



Cranial fracture was present in 51 (49.03%) patients.

Table 7: Associated Intracranial Injuries

	No. of patients	Percentage
Present	48	46.15
Absent	56	53.84

Associated intracranial injuries were present in 48 (46.15%) patients. Among the intracranial injuries, 30 patients had contusions, 13 patients had subdural hematoma (SDH) or subarachnoid hemorrhage (SAH), 5 patients had intraventricular hemorrhage (IVH).

MANAGEMENT

Table 8: Management of Patients

Management	No. of patients	Percentage
Surgery	55	60.43
Conservative	36	39.56

Among the group of patients who underwent surgery, craniotomy was done in 48 patients and craniectomy was done in 7 patients. Craniectomy was done when there was comminuted fracture of the overlying bone. All the patients were transfused blood pre or post operatively.

Table:-9 Criteria For Surgery

1.I have taken all patients with volume>20 ml as surgical candidates ie n=55

Results In Surgical Candidates N=55

FRACTURE	No. of patients	Percentage
YES	7	12.73
NO	48	87.27

Table:-10 Midline Shift In Surgical Candidates

MIDLINE SHIFT	No. of patients	Percentage
MORE THAN 5mm	32	58.18
LESS THAN 5mm	23	41.82

Table:-11 Site Of EDH In Surgical Candidates N=55

SITE OF EDH	No. of patients	Percentage
TP	28	50.91
FRONTAL	15	27.27
PARIETAL	10	18.18
POSTERIOR FOSSA	2	3.64

Table:-12 Abnormal Pupillary Reaction In Surgical Candidates

ABNORMAL REACTION	No. of patients	Percentage
PRESENT	35	63.64
ABSENT	20	36.36

Table:-13 GCS IN N=55

GCS	No. of patients	Percentage
15	0	0
13-14	20	36.36
9-12	15	27.27
3-8	20	36.36

Clinical Outcome

Table 14: GOS at discharge (n=91)

S.No.	GOS	No.	Percentage
1.	1	13	14.3
2.	2	0	0.0
3.	3	2	2.2
4.	4	4	4.4
5.	5	72	79.1

At discharge, majority (79.1%) had GOS 5. Pupillary reaction improved in 23 (25.27%) patients. Improvement in GCS occurred in 59 (64.83%) patients. Improvement in paresis took place in 5 (5.49%) patients.

Table 15: Cause vs Age Group

S.No.	Cause	Age Group							
		<3 years		3-5 years		6-11 years		12-18 years	
		No.	%	No.	%	No.	%	No.	%
1.	FFH	5	100	12	85.71	25	78.1	16	32.7
2.	RTA	0	0	1	7.1	7	21.9	24	49.0
3.	FOO	0	0	1	7.1	4	12.5	2	4.1
4.	Assault	0	0	0	0	0	0	4	8.2
5.	Others	0	0	0	0	0	0	3	6.1

$\chi^2=30.501$; $p=0.002$ FFH was the major cause of injury amongst all the age groups. Assault and other causes were more common in older age group. Statistically, there was a significant association between age and cause of injury ($p=0.002$).

Table-16: Motor Function at discharge vs Motor function at admission

S.No.	Motor function score at admission	Discharge Motor Score											
		M1		M2		M3		M4		M5		M6	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1.	M1	-	-	-	-	-	-	1	20	1	20	3	60
2.	M2	-	-	-	-	-	-	0	0	2	40	3	60
3.	M3	-	-	-	-	-	-	0	0	0	0	7	100
4.	M4	-	-	-	-	-	-	0	0	0	0	7	100
5.	M5	-	-	-	-	-	-	0	0	0	0	20	100
6.	M6	-	-	-	-	-	-	0	0	0	0	34	100

IV. Conclusion

- GOS at discharge & age group ($p<0.001$), i.e. patients under different age groups had statistically significant difference in their outcome.
- GOS at discharge & GCS at admission ($p<0.001$), i.e. higher GCS at admission is associated with better outcome.
- GOS at discharge & admission motor score ($p<0.001$), i.e. higher admission motor score is associated with better outcome.
- GOS at discharge & pupillary reaction ($p<0.001$), abnormal pupillary reaction is associated with poorer outcome.
- GOS at discharge & paresis ($p=0.003$), i.e. presence of paresis is associated with poorer outcome.
- GOS at discharge & cranial nerve palsy ($p=0.001$), i.e. presence of cranial nerve palsy is associated with poorer outcome.
- GOS at discharge & EDH volume ($p<0.001$), i.e. larger the EDH volume, poorer the outcome.
- GOS at discharge & associated intracranial injury by ($p=0.024$), i.e. associated intracranial injury is associated with poorer outcome

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