

Original article:

Study of correlation of Clinicoradiological findings in cases of Head injury

Dr V Y Hadke* , Dr Apurva Lachke , Dr Shankarnath

Department of Surgery, Rural Medical College, Pravara Institute of Medical Sciences (DU) , Loni
Corresponding author*

Abstract:

Introduction: A number of studies have identified predictors of outcome after significant head injuries. To assess the level of consciousness and prediction of outcome of the patient, Glasgow coma scale is universally use. The numerical grading of three separate responses provides a degree of flexibility in defining the continuum of altered level of consciousness.

Methodology: Out of 2000 cases of head injuries seen in emergency department of Rural Hospital, 1500 were admitted and out of them 50 patients need operative intervention. Our series deals with the cases of head injuries operated in rural hospital .

Results: Recovery was influenced and correlated well with type of CT scan abnormality. The type of lesion on CT scan certainly predicts about severity of injury and outcome. In our study recovery was maximum (100%) in patients having depressed fractures without intracranial pathology. Recovery was also good (95%) in patients having extradural haematoma.

Conclusion: We concluded that gender does not play role in post traumatic mortality or in the incidence of acute complications after any degree of traumatic brain injury.

Introduction:

A number of studies have identified predictors of outcome after significant head injuries. To assess the level of consciousness and prediction of outcome of the patient, Glasgow coma scale is universally use. The numerical grading of three separate responses provides a degree of flexibility in defining the continuum of altered level of consciousness. The beside clinical indicators are not fairly accurate and may fail to indentify serious head trauma patients. Neuroradiology of trauma has undergone dramatic change in the past decade since the advents of computed tomography. The CT scan images can detect traumatic lesions of soft tissues as well as bones of skull with equal accuracy. The other simpler modality is x-ray of skull.¹

The mechanical brain damage that occurs at the time of injury cannot be repaired or reversed by therapy. But management should ensure that secondary damage does not occur. The primary neurological management is the identification and rapid treatment of localized mass lesion and raised intracranial pressure.²

Methodology

Out of 2000 cases of head injuries seen in emergency department of Rural Hospital, 1500 were admitted and out of them 50 patients need operative intervention. Our series deals with the cases of head injuries operated in rural hospital .The patients having history of antecedent ahead injury were examined .

Detailed clinical examination with elicitation of proper clinical history was done with special mention of following points:

- Time, place mode and type of injury
- H/o unconsciousness
- H/o vomiting
- H/o convulsions
- H/o ENT bleeding

We used Glasgow coma scale to assess level of consciousness. It includes three responses viz. eye opening, best motor response and best verbal response. Accordingly patients can be categorized as mild (13-15). Moderate (9-12) or severe (3-8).

To correlate the clinical findings and to confirm the diagnosis we had done CT scan head of every head injury patient.

Results:

Table No. 1: Incidence of symptoms related to the CT-Scan findings.:

Type of Injury on the CT-Scan	No. of cases	Symptoms			
		Un-Consiciousness	Vomiting	ENT Bleed	Convulsions
Generalized Cerebral Edema	25	15	08	05	01
Contusion	06	04	02	01	-
Fracture without pathology	08	03	01	02	-
SDH	12	08	05	03	01
EDH	20	15	06	05	-
Intracranial Hemorrhage	03	03	01	01	-
Multiple Lesions	10	08	06	02	01

Table No. 2: Type of CT-Scan abnormality.

C.T.-Scan findings	No. of cases	Percentage
Fracture without I.C. Pathology	08	06.00%
Generalized Cerebral Edema	25	50.00%
Contusion	06	12.00%
SDH	12	24.00%
EDH	20	40.00%
Intracranial Hemorrhage	03	06.00%
Mixed Lesions	10	20.00%

Table No. 3: Type of CT Scan abnormality to the outcome.

CT Scan finding	No. of cases	Good Recovery(%)		Expired (%)	
		No. of cases	Percentage	No. of cases	Percentage
Fracture without IC Pathology	08	08	100	-	-
GCE	12	10	83	2	17
SDH	12	06	50	3	50
EDH	20	19	95	1	05
Nixed Lesion	10	01	10	9	90

Table No. 4: Type of CT Scan finding and operative intervention to outcome.:

CT-Scan finding	No. of cases	Recovered		Expired	
		No. of cases	Percentage	No. of cases	Percentage
EDH	20	19	95	01	05
SDH	12	06	50	06	50
Depressed fracture without I.C. Pathology	08	08	100	00	00
Nixed Lesion	10	01	10	09	90

Discussion:

Recovery was influenced and correlated well with type of CT scan abnormality. The type of lesion on CT scan certainly predicts about severity of injury and outcome. In our study recovery was maximum (100%) in patients having depressed fractures without intracranial pathology. Recovery was also good (95%) in patients having extradural haematoma. Mortality was maximum (90%) in patients having mixed lesions. Lobato, cordobes et al in 1983 revealed outcome from severe head injury related to type of intracranial lesion detected on CT.

He showed that features associated with favorable outcome are:

1. Isolated extra cerebral haematoma
2. Single contusion
3. Cerebral edema
4. Normal CT Scan.

Poor outcome was associated with

1. Multiple contusions
2. Cerebral edema after removal of extra cerebral haematoma
3. Evidence of diffuse shearing injury.

Thomas A. Gennarelli et al in 1982 retrospectively demonstrated marked heterogeneity within the severe head injury group and points out that patient with the same GCS scores have markedly different outcomes depending on causative lesion. The type of lesion is very important in determining outcome as the GCS scores and both must be considered when describing severely head injured patient. In our study patients having abnormal pupillary and planter reflex showed abnormal CT scan findings in many of the cases and these signs were related to poor outcome of the patient.³

Mathiew Quigley et al in 1977 defined limits of survival after very served head injury for that they considered the ;⁴

GCS(3-5)

- CT scan: midline shift
- Pupillary changes
- Age factor.

They found that overall functional survival rate was 12.5% Jayme Lieberman et al in 2003 studied use of GCS pupil size and pupil reactivity to determine the outcome for trauma patients. They observed that patients presenting with GCS of 3 of and fixed pupils have no reasonable change of survival, while patients with GCS of 3 who are not having fixed pupils should be aggressively resuscitated because many of these patients survive to be discharged.

Out of 50 comes patients operated in our study 33 (66%) patients were recovered while 17 (34%) patents were expired. It seems that operative mortality depends upon the lesion for which the patient was operated. Highest recovery 100% seen in patients operated for depressed fracture without intracranial pathology. Similarly EDH

operated cases showed 86% recover while patients operated for SDH showed recovery in only 50% of cases. Highest mortality 90% with only 10% recovery seen in patients operated for mixed lesion.⁵

Thomas W, Lngfit et al in 1982 stated that outcome from head injury can be improved by the earliest possible removal of space occupying haematoma and early vigorous management of intracranial haematoma.⁶ Jack Wilbarger et al in 1990 stated that in spite of major advances in the diagnosis and management of head injury acute subdural haematoma continues to be one of the most lethal of all intracranial injuries. In our series 65% males recovered while 35% dies, similarly 66% females recovered while 34% dies. Raul Coimbra et al in 2003 studied the role of sex on post traumatic mortality in head injury patients.⁷

Conclusion:

We concluded that gender does not play role in post traumatic mortality or in the incidence of acute complications after any degree of traumatic brain injury.

References:

1. Anne C. Mosenthal et al: Effect of age on functional outcome of mild traumatic brain injury, J. of trauma, 56: 1042-1048, 2004.
2. Baker A.M. et al: Computer assisted tomography of the head, an evaluation, Mayoclinic proc, 49:17-27, 1974.
3. Thomas et al : The outcome from severe head injury with early diagnosis and intensive management, J. of Neurosurgery, 47: 491-502, 1977.
4. Bruce D.A. et al : Diffuse cerebral swelling following head injury in children, the syndrome of malignant brain edema J. of Neurosurgery, 54:170-178, 1981.
5. Choi S.C. et al : Chart for outcome prediction in severe head injuries, J. of Neurosurgery, 59: 294-297, 1983.
6. Thomas et al : GCS score motor score alone is a better predictor? J. trauma, 54:671-680, 2003
7. Raul et al : Enhanced specificity of prognosis in severe head injury, J. of Neurosurgery 69:381-385, 1988