

Original Research Article


Prospective study of outcome of post traumatic cerebral contusion in different lobes in Rangaraya Medical College, Kakinada

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Abstract

Background: Cerebral contusion, latin ‘contusio cerebri’, a form of traumatic brain injury, is a bruise of the brain tissue. Contusion occurs in 20-30% of severe head injury. Our aim was to study the outcome of post traumatic cerebral contusion in different lobes in tertiary care centre, Rangaraya Medical College, Kakinada.

Materials and methods: This was a prospective study of 6 months duration conducted in Government General Hospital under Rangaraya Medical College, Kakinada, which is a Tertiary care Hospital, rendering services to two large densely populated districts namely, East and West Godavari districts of Andhra Pradesh. All patients sustained head injury was taken up for CT scan at admission. Patients with effacement of ipsilateral ventricle or midline shift to opposite side or mass effect were operated immediately. Patients without the above signs were included in conservative groups, a repeat scan of CT brain was done after 6 hours and 48 hours. Follow up scan done on 7th day and discharged after regression of symptoms, Repeat scans were done at follow up on outpatient basis.

Results: Total of 75 cases of contusion was treated in our hospital with an average follow up period of one month up to 6months. Ratio of male to female was 4:1 in our study. Conservatively treated cases

were 38 and surgery was done in 37 cases. Commonest location of contusion was frontal lobe, involving both hemisphere in 12 patients, multiple lobe involvement in same hemisphere in 19 patients, associated with EDH/ SDH/ SAH/ DAI in 26 patients, with skull fracture in 13 patients. 12 conservatively managed patients required surgery after repeat scan done at 6-48 hours interval duration due to surrounding edema causing mass effect, deterioration of neurological condition, signs and symptoms of persistent raised intracranial pressure (Cushing Reflex).

Conclusion: In our study, we found that associated SDH/ EDH/ DAI/ skull fracture, GCS at the time of presentation, location of contusion are the determining factors for patient outcome. Frontal lobe is most involved lobe with good outcome in both conservative and surgery group. Patients presented with poor GCS have very high mortality.

Key words

Traumatic cerebral contusion, Different lobe, Prognostic Factor, Outcome.

Introduction

All lacerations or contusions of the brain, either due to direct injury as in a depressed fracture and penetrating injury or in a closed head injury due to an acceleration-deceleration type of trauma are associated with some amount of subpial and subcortical extravasation of blood. The damaged capillaries in the surrounding area give rise to a number of small hemorrhages and the area of laceration is surrounded by an area of oedema. When extensive, this edema may result in raised intracranial pressure (ICP) [1-5].

Four stages of evolution:

- a. Stage of initial compression
- b. Stage of venous congestion, edema, anoxia and neuronal irritation
- c. Stage of arterial obstruction, anemia and neuronal paralysis
- d. Stage of irreversible neuronal failure and death.

Materials and methods

All patients diagnosed with contusion in the trauma patients presenting to Government General Hospital, Kakinada. This was a prospective Study conducted from April 2019 to September 2019 for a period of 6 months. A total of 75 patients were included in the study, with a mean average follow up 3-5 months. All trauma patients with CT findings of contusion were included in the study.

Following details were noted for all the patients:

1. Patient condition at the time of admission.
2. Mechanism of injury: RTA/fall/assault/others.
3. Under influence of alcohol-yes/no.
4. Any associated injuries of limb/chest injury/abdomen injury.
5. Radiological imaging-CT brain.
6. Mode of management to be given.
7. Clinical course in the hospital.
8. Prognosis, Discharge and Follow up.

Selection criteria for conservative management:

- GCS 3
- GCS 15
- GCS 13-14 with no midline shift in CT head.

All surgically managed patients underwent decompressive craniectomy in corresponding site. In case of bilateral lobe contusion, decompressive craniectomy was done where the size of contusion was large. In two patients bilateral decompressive craniectomy was done for bilateral frontal contusion.

Results

Sex distribution was as per **Table – 1**. Age distribution was as per **Table – 2**. Glasgow coma scale at admission of the patients was as per **Table – 3**. Associated intracranial injury was as per **Table – 4**. Conservative outcome was as per

Table – 5. Surgical outcome was as per **Table – 6.** Glasgow outcome scale was as per **Table – 7.**

Table – 1: Total number of patients-sex distribution.

	No. of male patients	No. of female patients
Frontal lobe	25	6
Temporal lobe	9	2
Parietal lobe	6	4
Occipital lobe	0	0
Multi-lobe	20	3
Total	60	15

Discussion

Head injury has become a leading cause of morbidity and mortality all over the world. In India, the incidence of head injury has been increasing in rapid pace. Non-compliance of traffic rule, overriding, alcohol consumption,

poor condition of road and illiteracy are the major reasons for injuries in young individuals more often. In our study, most of the patients are male with sex ratio of 4:1, with age distribution of 16-75 years mean age 40 years.

Other associated finding noted in patients with traumatic contusion:

1. Under alcohol influence: 40 patients
2. Medical illness: 15
3. Rib fracture: 10
4. Limb injury and fracture: 15

12 conservatively managed patients required surgery. All surgical patients underwent corresponding site decompressive craniectomy with placement of bone flap in anterior abdominal wall. EDH/SDH evacuated intraoperatively if associated with contusion; wound debridement and removal of bone fragment with realignment done for skull fracture.

Table – 2: Total number of patients-age distribution.

	<20Years	20-30 Years	30-40 Years	40-50 Years	>50 Years
Frontal lobe	3	10	9	6	3
Temporal lobe	1	1	2	4	3
Parietal lobe	0	1	3	3	3
Occipital lobe	0	0	0	0	0
Multi-lobe	0	3	7	7	6
Total	4	15	21	20	15

Table – 3: Glasgow coma scale at admission of the patients.

	3	3-8	9-12	13-14	15
Frontal lobe	1	1	4	7	18
Temporal lobe	1	1	2	5	2
Parietal lobe	2	3	2	2	1
Occipital lobe	0	0	0	0	0
Multi-lobe	3	9	5	3	3
	7	14	13	17	24

Table – 4: Associated intracranial injury.

	EDH/SDH/SAH/DAI	Skull fracture
Frontal lobe	5	18
Temporal lobe	8	6
Parietal lobe	8	5
Occipital lobe	0	0
Multi-lobe	17	7

Table – 5: Conservative outcome.

		Death	Survived
Frontal lobe	21	1 (4%)	20 (95.2%)
Temporal lobe	6	2 (33%)	4 (66)
Parietal lobe	4	2 (50%)	2 (50%)
Occipital lobe	0	0	0
Multi-lobe	7	3 (42.8%)	4 (57.1%)

Table – 6: Surgical outcome.

		Death	Survived
Frontal lobe	10	2 (20%)	8 ((80%)
Temporal lobe	5	3 (60%)	2 (40%)
Parietal lobe	6	4 (66.6%)	2 (33.3)
Occipital lobe	0	0	0
Multi-lobe	16	11 (68.7%)	5 (31.2%)

Table – 7: Glasgow outcome scale.

		1	2	3	4	5
Frontal lobe	Conservative group	1	0	0	0	20
	Surgery group	2	0	0	1	7
Temporal lobe	Conservative group	2	0	0	1	3
	Surgery group	3	0	0	1	1
Parietal lobe	Conservative group	2	0	0	1	1
	Surgery group	4	0	1	1	2
Occipital lobe	Conservative group	0	0	0	0	0
	Surgery group	0	0	0	0	0
Multi-lobe	Conservative group	3	0	0	3	1
	Surgery group	12	1	1	1	1

Conclusion

In our study, we found that associate SDH/ EDH/ DAI/ skull fracture, GCS at the time of presentation are the determine factor of patient outcome. Frontal lobe is most involved lobe with good outcome in both conservative and surgery group. Patients presented with poor GCS have very high mortality.

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