

Extradural hematoma in Baghdad Neurology surgery hospital

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Summary:

Background: Extradural hematoma (epidural hematoma) result from tearing of dural or skull vessels caused by deformation of the skull or fracture. Epidural hematoma can occur at all ages but are seen primarily in patients younger than 60 years.

Patients and Methods: this prospective study was conducted on 50 patients (38 male, 12 female) suffering from head injury and has a CT scan evidence of extradural hematoma during the period from 1 January 2006 to 31 December 2008 in Neurology surgery hospital.

Results: There were 4 patients above 50years, the cause of injury was fall in 50%, assault 24%, RTA 20% and bullet injury 6%. the commonest site was temporal region 42%. surgical treatment were done to 39 patients, Middle meningeal artery and its branches was the source of bleeding in 42%, full recovery achieved in 62%, post operatively 4 patients suffered from anaemia, one of them required blood transfusion.

Conclusion: Extradural hematomas are life-threatening injury should be treated by surgery and conservative treatment only for small EDH with no symptoms and remain so or disappear by Serial follow-up CT scan

Keywords: Extradural hematoma. Headache, Lucid interval, Assault, Craniotomy,

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Introduction:

Extradural hematoma (epidural hematoma) , a collection of blood between the inner table of the skull and the Dura, is an infrequent sequel of head injury, occurring In less than 2 percent of patients admitted with craniocerebral trauma . The types of trauma that caused EDH are the same as those that cause other types of head injuries and include fall, vehicular accidents, and assault. EDHS result from injury to the middle meningeal artery (MMA) or vein, the diploic veins, or the dural venous sinuses (1). The rapidity of the appearance and progression of symptoms and signs is variable, EDH usually presented as minimal complains such as headache, nausea and vomiting. Depressed consciousness, hemiparesis, pupillary dilation are frequently seen with EDH but are not pathognomonic (2, 3) this is also applied to the lucid interval (a transient loss of consciousness result from a concussive blow and is followed by a return of consciousness until the growing EDH result in unconsciousness again)(1). When an EDH suspected, a CT scan should be performed; the hematoma will appear as hyperdense, biconvex area between the skull and the brain. Following the CT scan, an immediate craniotomy with evacuation of the hematoma is the treatment of choice. In rapidly deteriorating patients with suspected EDH, a CT scan is inappropriate, and a burr hole is placed ipsilateral to the side of pupillary dilatation and contra lateral to the side of motor signs (4). Recurrence or residual hematoma may result from failure to gain full access to the hematoma and to the lacerated meningeal vessel or multiple small bleeders on the Dura where it has been stripped off the inner table of the skull. Associated intracranial hematoma such as subdural

Hematoma, intracerebral hematoma and cerebral contusion have a detrimental effect on outcome.

Patients and Methods:

The study was conducted in Neurology surgery hospital in Baghdad over a period of 2 years from January 2006 to December 2008. The average age of patients was 21 (range 4month- 75years) .Twelve were female and thirty-eight were male .The patients were admitted and most of the patients stabilized initially with diuretic and hyper ventilation and the Ct scan done to all of them , majority of the EDH operated on (craniotomy or craniectomy) and followed for 4month ,

Result:

The most commonly affected age-group (2-9 years) , males comprised 78% of the cases, the rest were females .Table 1. Sixteen patients were students, seven civilian service, two retired, five unemployed and nine private sectors. Baghdad was the residence of 39 patients (78%) Table2.

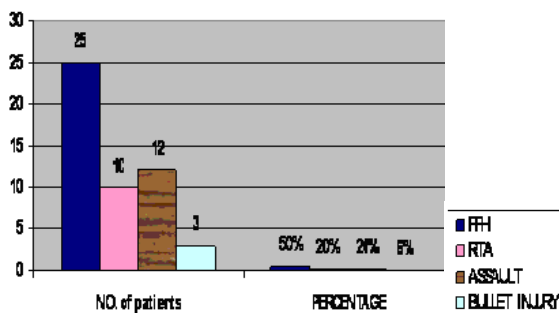
Table1: Age and Gender distribution of the patients

AGE	No. of patients	%	GENDER	
			FEMALE	MALE
0—9 YEARS	16	32%	9	7
10—19 YEARS	13	26%	2	11
20—29 YEARS	9	18%	0	9
30—39 YEARS	6	12%	1	5
40—49 YEARS	2	4%	0	2
50—59 YEARS	1	2%	0	1
> 60 YEARS	3	6%	0	3
TOTAL	50	100%	12	38

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Table2: occupation and residence of the patients

Occupation	NO. of	Percentage
Students	16	32%
Child(bellow6years	10	20%
Private sector	9	18%
Civilian service	7	14%
Unemployed	5	10%
Retired	2	4%
Others	1	2%
Residence(Governorates)		
Baghdad	39	78%
Wasit	4	8%
Dayala	2	4%
Anbar	1	2%
Salah aldeen	1	2%
Dohok	1	2%
Nasyria	1	2%
Others	1	2%

**Figure 1: Bar chart showing the causes of the injury****Table3: Signs and Symptoms**

Signs and symptoms	NO. of patients	Percentage
Symptoms		
Headache	27	56%
Nausea and vomiting	24	48%
Signs		
Heart rate		
Bradycardia	1	2%
Tachycardia	5	10%
Blood pressure		
Hypertensive	1	2%
Hypotensive	2	4%
Level of consciousness		
Conscious	33	66%
Drowsy	12	24%
Unconscious	5	10%
Pupils		
Left dilated	9	18%
Right dilated	7	14%
Motor deficit		
Hemi paresis	4	8%
Hemiplegic	1	2%
Sensation		
Hemianesthesia	1	2%
Respiratory pattern		
hyperventillation	3	6%
Other neurological signs		
Dysarthria	1	2%
Fit	1	2%

Table4: CT scans finding of the patients.

CT scan finding	NO. Of patients	Percentage
Site of hematoma		
Temporal	14	28%
Temporo -parietal	7	14%
Frontal	10	20%
Parietal	7	14%
Parieto-occipital	6	12%
Posterior fossa	1	2%
Side of hematoma		
Right	24	48%
Left	26	52%
Thickness of hematoma		
1-5 cm	42	84%
5-10cm	7	14%
More than 10cm	1	2%
Types of skull fractures		
One linear fracture	29	58%
Multiple linear fracture	3	6%
Depressed fracture	2	4%
Total fractures	34	68%
Associated intracranial injuries		
Intracranial hematoma	2	4%
Subarachnoid haemorrhage	1	2%

Regarding the types of trauma, fall from a height (FFH) was the commonest cause of injury in 50% of the cases, Assault 24%, Road traffic accidents (RTA) 20% and non penetrating (tangential)bullet injuries 6 % figure 1.

One patient in this study was suffering from Thalasemia. Seventeen patients admitted to the hospital after 3-10hours, three within the first two hours ,Twenty-three in the first day ,six in the first week and one more than one week .

On admission, there were only one patient developed hypertension and bradycardia, six tachycardia, two hypotension and no one show changes in body temperature.

Although five cases had motor deficit only one patient had hemianesthesia Table3.lucid interval were seen in eight patients. All patients had a CT head scan, commonest site was temporal and commonest size was1-5CM, thirty-four patients had skull fracture and there was two intracerebral hematoma and one with subarachnoid haemorrhage Table4.

The surgical management of post-traumatic epidural hematoma is one of the most “cost-effective “of all surgical procedures in terms of quality of life and years preserved (5,6) Thirty-nine patients treated surgically(figure 3) three of them by craniectomy and thirty-six by craniotomy . Source of bleeding was middle meningeal artery or veins and its branches in 42 %(21), multiple Dural point 18% (9), fracture site (diploic veins) 14 %(7), and venous sinuses 4 %(2). During the follow up period no recurrence reported, anaemia observed in 4 cases, one of them required blood transfusion. The average

length of stay was 7 days .The patients were followed up for an average time of 4 months. Full recovery achieved in 62%, good 34%, fair 2% and one death 2% Table5.

Table 5: The outcomes.

Outcomes	NO. of patients	PERCENTAGE
Full recovery	31	62%
Good	16	32%
Fair	2	4%
Poor	0	0%
Death	1	2%
Total	50	100%

Outcomes were defined as follows:

- Full recovery mean there's no neurological deficit or complains
- Good mean no neurological deficit but still there's mild symptom e.g. headache
- Fair mean there is mild or moderate neurological deficit e.g. hemi paresis
- Poor mean there is severe neurological deficit

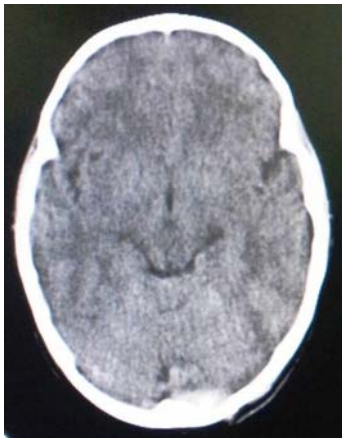


Figure2: Small EDH in the occipital region treated surgically



Figure 3: EDH in the lateral wall of the skull treated conservatively

Discussion:

Epidural hematoma can occur at all ages but are seen primarily in patients younger than 50 years (7). In this study The age of the patients ranged from 4 months to 75 years, two cases below 2 years and four cases (8%) over the age of 50 and this is similar to

other studies (7, 8). 76% of the cases were male and 24% were female this is close to a study done by Jameison and Yeland (male to female predominance of 4:1) (9). Baghdad was the residence of 78% of the patients; while a study done in Baghdad at, 1994 showed that 54% of the cases from Baghdad, (10), this high percentage may be due to the establishment of neurosurgical wards in the other governorates. Falls constitute 50% of cases, assault 24%, RTA 20% and Bullet injury 6%. Kwan-Hon Chan et al study (11) show that FFH constitute 45% (which is close to this study) followed by RTA 37% and hit by object (assault) 18%, this difference in order of frequency probably due to the military activity and violence, which were increased at the time of the study. Headache (54%) nausea and vomiting (48%) were the common presentation in this study but the classic lucid interval seen in only eight cases (16%) which is not exceeding the incidence in other studies (12). Of those 5 cases who suffered motor deficit only one case show hemianesthesia (because the patients drowsy and it was difficult to assess the sensation), nevertheless only one patient had hemiparesis during the follow up period which may be due to the associated intracerebral hematoma .CT scan is clearly the procedure of choice in the evaluation of the head-injured patients and has probably significantly improved outcome after head injury (13)). There was no bilateral hematoma reported, temporal region was the commonest site (42%) and EDH distributed in the lateral walls of the skull constitute 56 percentage which is close to a study done by Ramiro D, Lobato et al (14). Epidural hematomas in the posterior fossa are rare finding (15) ,and in this study only one of the cases the hematoma was in the posterior fossa (2%) , Skull fractures observed in 68% of the patients, this figure are less than in the literature where it present in (90%) of the EDH patients (4). Associated intracranial injuries occur in only two cases (one of them had intracerebral hematoma and subarachnoid hemorrhage) and the outcomes were bad in both of them (16). Conservative treatment undertake in 11 patients when the hematoma was small (the thickness less than 15mm) with no significant mass effect or midline shift, the patients were fully conscious and remains so during the follow-up period figure 2. Recent studies (5, 17) advocate this approach The Majority of the patients treated with craniotomy (72%) and three patients with craniectomy (6%), (one of them in the posterior fossa and the other two associated with depressed fracture and it was difficult to perform craniotomy). Middle Meningeal artery and its branches were the main source of the bleeding (42%), still close to other studies (18). Anemia developed in 4 patient but only one case required blood transfusion (there was associated scalp wound and delay in the transfer to the hospital). Most of the patients (94%) had the desired outcome (full recovery or good), there was only one death (2%) where the age of the patient was 75 and there was associated intracerebral

hematoma and subarachnoid hemorrhage, and this is low mortality in comparison to other studies(19) . The mortality rate for patients with Acute EDA IS directly related to the level of consciousness before surgery & it is approaches zero in those patients who are awake and alert without focal deficit before surgery (20). In this study the majority of the patients(66%) were awake & alert without focal deficit before surgery & this may explain the low mortality rate(2%).

Conclusion:

Extradural hematoma is life threatening injury should be treated by surgery and conservative treatment only for small EDH with no symptoms and remain so or disappear by serial follow-up CT scan and it is strongly recommended that an emergency CT scan be obtained as soon as possible(preferably within half an hour) .

References:

- 1- Srinath Samudrala, Paul R.Cooper,Traumatic Intracranial Hematoma: wilkin principle of Neurosurgery1996: 276:2797-2806
- 2- Poon WS, Rehamn SU, Poon CYF, Li AKC. Traumatic extradural hematoma of delayed onset is not a rarity. Neurosurgery 1992; 30:681-686.
- 3- Smith HK, Miller JD. The danger of an ultra-early computed tomographic scan in a patients with an evolving acute epidural hematoma. Neurosurgery 1991;29:258-260.
- 4-Springer MF,Baker FJ,Cranial burr hole decompression in the emergency department .Am J Emerg Med 1988; 6:640-646.
- 5-Sujit S.Prabhu . Alois Zauner. M.R.Ross Bullock . surgical management of traumatic brain injury . Youmans Neurological surgery 2004; 328:5145-5178.
- 6-Pickard JD,Bailey S,Sanderson H, et al :Steps towards cost-benefit analysis of regional neurosurgical care. BMJ 301: 629-635, 1990
- 7- Cordobaes F,Lobato RD, Rivas JJ, et al ; Observation on 82 patients with extradural hematoma: Comparison of results before and after the advent of computerized tomography . J Neurosurgery 54; 179-186, 1981
- 8- Marshall L,Gautille T,Klauber M ;The outcome of sever closed head injury . J Neurosurgery75; 528-536, 1991
- 9- Jamieson KG,Yeland JDN. Extradural report of 167 cases Neurosurgery; 2:13-23, 1968
- 10- A study of 50 cases of extradural hematomas 1994 done by ALI KAMIL Al-shalchy ,A thesis submitted to the Iraqi commission for medical specialization in fulfillment of requirement for specialization in neurosurgery
- 11- Kwan -Hon Chan, Kirpal S. et al. The significance of skull fracture in acute traumatic intracranial hematomas in adolescents. Prospective study ,j Neurosurgery ;72:189-194 ,1990.
- 12- Marike Zweinenberg-Lee ,J.Paul Muizelaar. Clinical Path physiology of Traumatic Brain Injury. Youmans, Neurological surgery 2004; 324:5039-5059.
- 13- Raj K Narayan and Suzanne Kempisty, CLOSED HEAD INJURY, Principles of Neurosurgery2005; 19:301-317,
- 14 - Romiro D,Lobato, Ivan Rivas et al .Acute epidural hematoma ; an analysis of factors influencing the outcome of patients undergoing surgery in coma Neurosurgery ;68:48-57,1988.
- 15 - Ciembroniewicz J, Epidural hematomas of the posterior fossa; Review of the literature with ad dition of three cases. J Neurosurgery 22:465-473, 1981
- 16- Rivas JJ, Lobato RD, Sarabia R, et al. . . . Extradural hematoma; analysis of factors influencing the courses of 161 patients. Neurosurgery 1988; 23:44-51.
- 17- CLAUDIA ROBERTSON , Critical Care Management of Traumatic Brain Injury, Youmans Neurological surgery.2004; 327:5103-5137
- 18-Marcelo Vilela and G Alexander West. TRAUMATIC INTRACRANIAL HEMATOMAS. Rengachary SS, Ellenbogen RG(eds) . Principles of Neurosurgery 2nd edn .2005: 22:361-368
- 19- Jameison A.The influence of concomitant intradural pathology on the presentation and outcome o f patients with acute traumatic extradural hematoma . Acta Neurochir (Wein) 1992; 115:86-89
- 20- JOUSHUA R. DUSICK, DANIEL.F.KELLY, PAUL .VESPA, AND DONALD B. BECKER, Surgical Management of Severe Closed Head Injury in Adults. SCHMIDEK &SWEET. Operative Neurosurgical Techniques. 5 th edn 2006:4: 44-69