RESULTS

This study included 50 post-traumatic unconscious patients admitted to Gamal Abd-El-Nasser hospital, Health Insurance Organization, on Alexandria.

Table II shows the age and sex distribution of the patients included in the present study. 34 cases were males (68%), and 16 cases were females (32%). The age of the patients of this series ranged from 16 to 72 years with a mean of 38.94±25.05. There was no significant difference between the mean age in years of both sexes, the mean age of males was 39.56±16.33, while in females the mean age was 37.63±15.41 ($t=0.3967$, $P>0.05$).

Table II:

Age and sex distribution of the patients included in the present study.

Age groups	Males		Females		Total	
	No.	%	No.	%	No.	%
15-24	7	20.59	3	18.75	10	20
25-34	8	23.53	4	25	12	24
35-44	5	14.71	3	18.75	8	16
45-54	6	17.65	3	18.75	9	18
55-64	5	14.71	2	12.5	7	14
65-74	3	8.82	1	6.25	4	8
Total	34	100	16	100	50	100
$\bar{x}$	39.56		37.63		38.94	
±SD	16.33		15.41		25.05	

The causes of head-injury as shown in (Fig.8) were: Raod traffic accidents were responsible for 68% (34 cases), work-related injuries in 16% (8 cases), falling from a hieght in 10% (5 cases), while interpersonal violence (injury by blunt heavy object) in 6% (3 cases).

Fig. (8): Distribution of different causes of head injury in the present study.

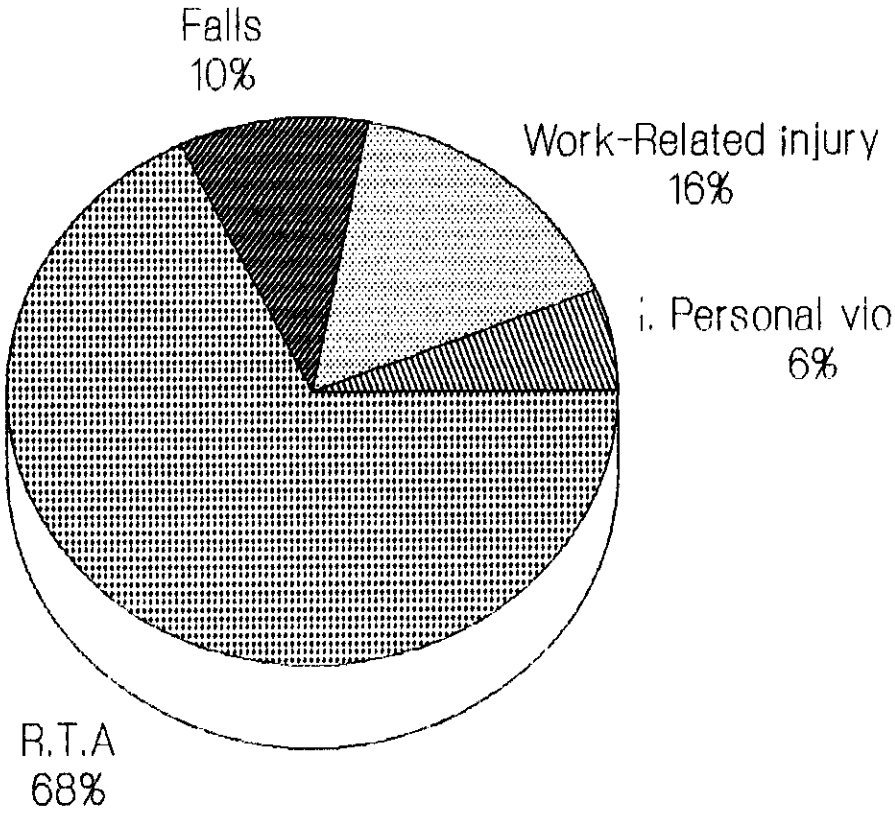

Table III:

The distribution of the causes of head injuries in the different age groups of the present study.

Age group	Road traffic accidents		Work-related injuries		Other causes		Total	
	No	%	No	%	No	%	No	%
15-24	7	20.59	-	-	3	37.5	10	20
25-34	9	26.47	1	12.5	2	25	12	24
35-44	6	17.65	1	12.5	1	12.5	8	16
45-54	4	11.76	4	50	1	12.5	9	18
55-64	5	14.71	2	25	-	-	7	14
65-74	3	8.82	-	-	1	12.5	4	8
Total	34	100	8	100	8	100	50	100

Table III shows that road traffic accidents were the commonest cause of head-injury, in all age groups of the present series, the highest incidence was 26.47% (9 cases) found in the age group 25-34 years, followed by 20.29% (7 cases) in the age group 15-25 years.

The highest incidence of work-related injuries was found in the age group 45-54 years (4 cases, 50%), while the highest incidence of head-injury due to other causes (falls, interpersonal violence) was 37.5% (3 cases) in the age group 15-24 years.

In the present series, different associated injuries in one or more systems of the body were found in 26 cases (52%). A total of 34 associated injuries were recorded as shown in (fig. 9). Among these, 17 cases (34%) had long bone fractures, 10 cases (20%) had chest injuries, 5 cases (10%) had abdominal visceral injuries, and 2 cases (4%) had spinal injuries.

Fig (9): The percentage of different associated systemic injuries in the present series.

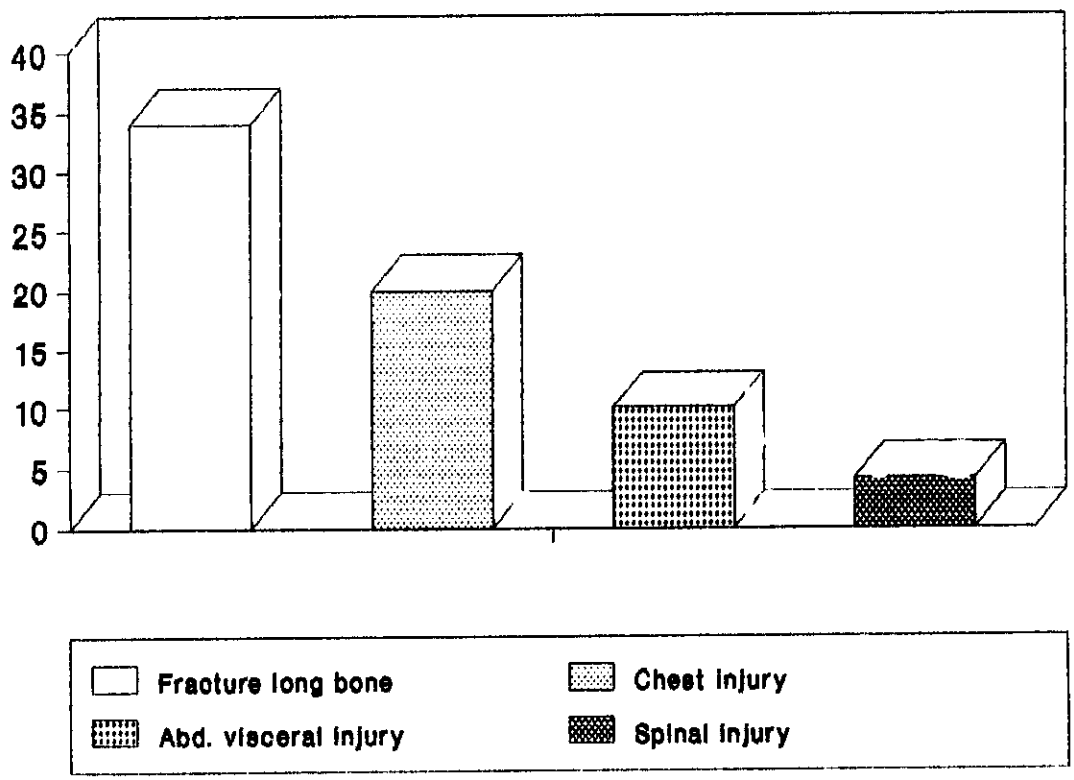

Table IV:

The relation between causes of head injury and the occurrence of associated multisystemic injuries.

Multisystemic injuries	Road traffic accident		Other causes of head injury		Total	
	No	%	No	%	No	%
- Presence	21	61.76	5	31.25	26	52
- Absence	13	38.24	11	68.75	24	48
Total	34	100	16	100	50	100

Table 6 shows a significant association between road traffic accident and multisystemic injuries. As 21 cases (61.76%) of head-injured patients due to R.T.A had one or more other systemic injuries, while the other causes of head injury were associated with only 5 cases (31.25%) of multisystemic injuries. (X^2 =4.0.588, P<0.05).

Fig 10, shows that 17 cases (34% of the total series) were hypotensive on admission (systolic blood pressure <90mm Hg), all of them were associated with multisystemic injuries. While 15 cases (30% of the total series) were hypoxic on admission (arterial PO_2 <65 mm Hg) and only 6 cases (40%) of them were associated with multisystemic injuries.

Fig. (10) Relation between hypotension and hypoxia on admission to multi systemic injury.

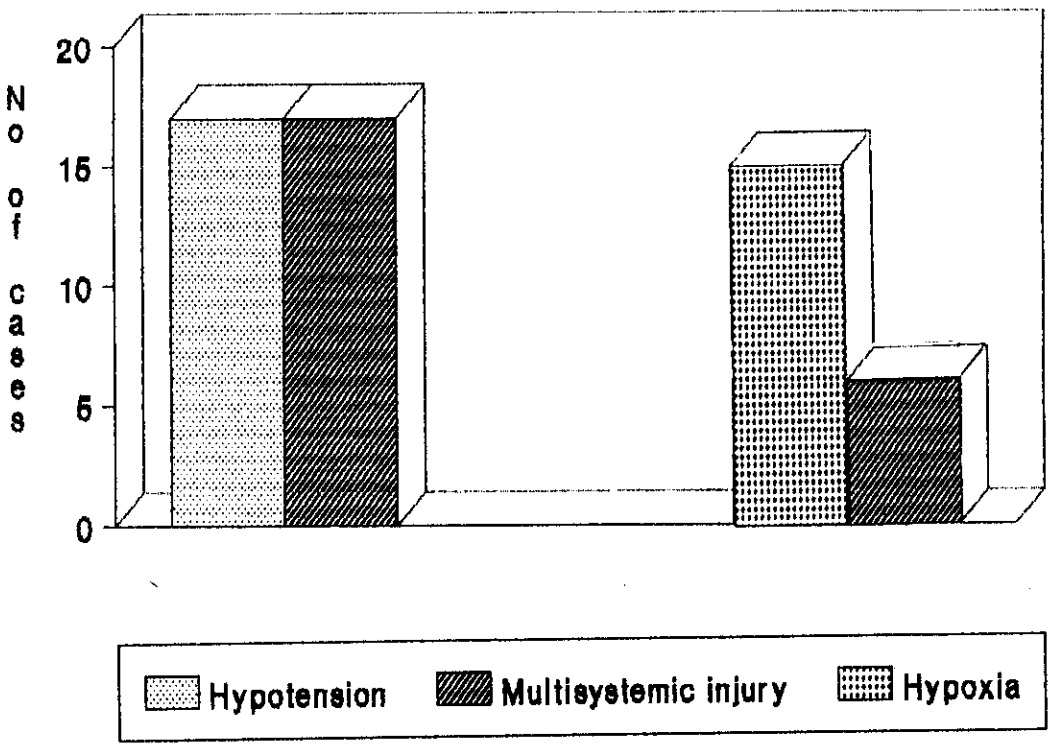

Table V:

The types of surgical intracranial lesions which were diagnosed by CT scan on admission.

The types of surgical intra-cranial lesions*	No	%
Epidural haematoma	6	24
Acute subdural haematoma	12	48
Intracerebral haematoma and contusion	7	28
Total	25	100

* CT scan show midline shift >5mm (managed surgically).

25 cases (50% of the total series) had intracranial mass lesions, with midline shift >5mm (surgical lesions) were diagnosed by CT scan. The types of these lesions as shown in table V were: epidural haematoma (6 cases, 24%) (Fig 11), acute subdural haematoma (12 cases, 48%) (Fig. 12), and intracerebral haematoma (7 cases, 28%), (Fig 13).

Table VI:

The types of non surgical intracranial lesions, as diagnosed by CT scan on admission.

The types of Non surgical intracranial lesions*	No	%
General brain swelling	9	36
Small intracranial haematomas	11	44
Normal CT brain scan	5	20
Total	25	100

* CT scan shows no midline shift or less than 5 mm (managed conseratively).

The other 50% of the total series (25 cases) had no defined midline shift (<5mm), (i.e non surgical lesions), the distribution of these lesions as shown on table VI were: 9 cases (36%) with general brain swelling, 11 cases (44%) had small intracranial haematomas (Fig 14) and 5 cases (20%) with normal CT scan.

Table VII shows the correlation between surgical (which were treated surgically), and non-surgical lesions (which were treated conservatively) as regard G.C.S, brain stem reflexes (pupillary light and oculocephalic reflexes), and plain x-ray skull on admission.

As regard neurological signs on admission, it was found that patients with surgical lesions were clinically worse than those with non surgical lesions. As patients with surgical lesions had high incidence of: low G.C.S score (3-5) which was found in 17 cases (68%), impaired or absent oculocephalic response in 16 cases (64%), and bilateral unreactive pupils in 14 cases (56%); compared to the incidence of these signs in patients with non surgical lesions as represented by 7 cases (28%), 5 cases (20%), and 4 cases (16%) respectively.

Also, it was noted that, 8 cases of the patients with surgical intracranial mass lesions had unequal pupillary size.

As regards skull fractures demonstrated by plain x-ary, no significant difference was found between skull fractures in patients with surgical lesions (12 cases, 48%) and those with non surgical lesions (9 cases, 36%), ($P>0.05$).

Table VII:

Correlation between patients with surgical and non surgical intracranial lesions to G.C.S score, oculocephalic response, pupillary high response and plain x-ray on admission.

Factors	Patients with surgical intra cranial lesions		Patients with non surgical intracranial lesions		Total		Z-test
	No	%	No	%	No	%	
1-Galasgow coma scale							
3-5	17	68	7	28	24	48	1.961
6-8	8	32	18	72	26	52	2.041
Total	25	100	25	100	50	100	
2-Oculocephalic response							
-impaired/ absence	16	64	5	20	21	42	2.041
-presence	9	36	20	80	29	58	2.4
Total	25	100	25	100	50	100	
3-pupillary light response							
- bilateral unreactive pupils.	14	56	4	16	18	36	1.768
- One or both reactive*.	11	44	21	84	32	64	2.357
Total	25	100	25	100	50	100	
4-Plain skull x-ray.							
- Skull fracture.	12	48	9	36	21	42	0.557 (NS)
- No skull fracture.	13	52	16	64	29	58	0.655 (NS)
Total	25	100	25	100	50	100	

NS = not significant.

* = including 8 cases with unequal pupillary size and all of them had intracranial surgical lesions.

Table VIII:

Follow up CT scan in both surgically and conservatively treated patients during the first two weeks of the trauma.

Follow up CT scan	Surgical		Conservative		Total	
	No	%	No	%	No	%
New surgical intracranial lesions *	3	12	5	20	8	16
No new lesions	22	88	20	80	42	84
Total	25	100	25	100	50	100

* The difference not significant.

In the present study, follow-up CT scan during the first two weeks after trauma showed that 8 cases (16% of the total series) had new surgical intracranial lesions with midline shift> 5 mm (Table VIII). Of these 3 cases (12%) required another surgical decompressive operation, while 5 cases (20%) who had non surgical intracranial lesions, on admission, developed late intracranial hematomas during the first two weeks after trauma, which required surgical decompression.

Table IX:

Relation between patients with surgical and non surgical intracranial lesions as diagnosed on admission to the outcome.

Outcome	patients with surgical intracranial lesions.		patients with non surgical intracranial lesions.		total	
	No	%	No	%	No	%
* GR, or M.D (good outcome)	10	40	17	68	27	54
** S.D, veg, or dead (bad outcome).	15	60	8	32	23	46
total	25	100	25	100	50	100

* G.R. = Good recovery, M.D= moderate disability.
** S.D.= Severe disability, Veg= vegetative.

As regards the final outcome 23 cases (46% of the total series) ended in the categories of severe disability, vegetative, or dead (bad outcome), while 27 cases (54% of the total series) ended in the categories of good recovery, or moderate disability (good outcome).

Tabel IX shows the difference in outcome between patients with surgical and non surgical lesions (as diagnosed on admission), a significant bad outcome was found in the patients with surgical lesions (15 cases, 60%) than those with non surgical lesions (8 cases, 32%) (X^2 =3.9452, P<0.05).

Table X:

The final outcome in relation to the types of intracranial lesions.

Outcome	Types of surgical intracranial lesions (midline shift >5mm)						Types of non surgical intracranial lesions (midline shift<5mm)						Total	
	epidural haematoma		acute subdural hematoma		intracerebral haematoma		General brain swelling		Small intracranial haematoma		Norami CT scan			
	no	%	no	%	no	%	no	%	no	%	no	%	no	%
G.R or M.D	5	83.33	3	25	2	28.57	6	66.67	7	63.64	4	80	27	54
S.D, veg or dead.	1	16.67	9	75	5	71.43	3	33.33	4	36.36	1	20	23	46
Total	6	100	12	100	7	100	9	100	11	100	5	100	50	100

It was also found that, the bad outcome was confined mainly to the patients with acute subdural haematoma (9 cases, 75%) and intracerebral haematoma (5 cases, 71.43%), while patients with epidural haematoma had the best result as one case only died (16.67%) and patients who had normal CT brain scan (1 case died, 20%), (table X).

As regards the correlation between the outcome and clinical state on admission, it was found that patients with G.C.S score of 3-5 had a highly significant bad outcome (17 cases, 70.83%) than those with G.C.S score of 6-8 (6 cases, 23.1%), $P<0.05$) (table XI).

Also, impaired or absence of oculocephalic response had a highly significant bad outcome (15 cases, 71.43%) than those with normal response (8 cases, 27.59%), $P<0.05$) (table XII).

Patients with bilateral unreactive pupils had a highly significant bad outcome (15 cases, 83.33%) than those with one or both pupils reactive (8 cases, 25%), $P<0.05$) (table XIII).

This relation was true in both patients with surgical and non surgical lesions.

It was also found that, patients who were hypotensive or hypoxic on admission, were associated with bad outcome (9 cases, 52.94% and 8 cases, 53.33% respectively). Morethan those without these insults (14 cases 42.42% and 15 cases, 42.86% respectively). However, the difference were not significant, but acceptable. (table XIV).

Table XI:

The outcome in relation to Glasgow coma scale.

Outcome	Glasgow coma scale score						
	3-5		6-8		Total		Z-test
	no	%	no	%	no	%	
-G.R or M.D	7	29.17	20	76.92	27	54	2.437 *
-S.D, veg or dead	17	70.83	6	23.1	23	46	2.335 *
Total	24	100	26	100	50	100	

* Significant.

Table XII:

The outcome in relation to oculocephalic response.

Outcome	Oculocephalic response						
	Impaired or absence		presence		Total		Z-test
	no	%	no	%	no	%	
-G.R or M.D	6	28.57	21	72.41	27	54	2.104 *
-S.D,veg or dead.	15	71.43	8	27.59	23	46	2.255 *
	21	100	29	100	50	100	

* Significant.

Table XIII:

The outcome in relation to pupillary light response.

Outcome	Pupillary light response						Z-test
	bilateral unreactive		one or both reactive		Total		
	no	%	no	%	no	%	
-G.R or M.D	3	16.67	24	75	27	54	2.507 *
-S.D, veg or dead	15	83.33	8	25	23	46	3.226 *
Total	18	100	32	100	50	100	

* Significant

Table XIV:

The outcome in relation to hypotension and hypoxia:

Outcome	hypotension							hypoxia						
	hypotension		no hypotension		Total		Z-test	hypoxia		normal PO in blood. 2		Total		Z-test
	no	%	no	%	no	%		no	%	no	%	no	%	
-G.R or M.D	8	47.1	19	57.58	27	54	0.499 (NS)	7	46.67	20	57.14	27	54	0.479 (NS)
-S.D, veg or dead.	9	52.9	14	42.42	23	46	0.493 (NS)	8	53.33	15	42.86	23	46	0.481 (NS)
Total	17	100	33	100	50	100		15	100	35	100	50	100	

NS: not significant.

Table XV:

Relation between different age groups in years and outcome.

Outcome	15-24		25-34		35-44		45-54		55-64		65-74		Total	
	no	%	no	%	no	%	no	%	no	%	no	%	no	%
- GR or MD	8	80	8	66.67	5	62.5	3	33.33	2	28.57	1	25	27	54
- S.D, veg or dead.	2	20	4	33.33	3	37.5	6	66.67	5	71.43	3	75	23	46
Total	10	100	12	100	8	100	9	100	7	100	4	100	50	100

Table XV shows the relation between age in years and outcome. It was observed that bad outcome increased steadily with increasing age from 20% in the age group 15-24 years to 75% in the age group 65-74 years.

Fig (15), shows that among the thirty cases who were below the age of 45 years old, 21 cases (70%) ended in good outcome (i.e. good recovery, and moderate disability), and 9 cases (30%) ended in bad outcome (i.e. severe disability, vegetative, or dead). Whereas, among the twenty cases above or equal to the age of 45 years old, 6 cases (30%) ended in the category of good outcome, and 14 cases (70%) ended in the category of bad outcome.

Fig.(15) The relation between age of the patients and outcome.