*ejpmr, 2017,4(6), 538-547*

SJIF Impact Factor 4.161

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

# "STUDY OF CLINICAL PROFILE AND PROGNOSTIC FACTORS IN COMATOSE PATIENTS ADMITTED IN MEDICAL WORDS, SIR T. HOSPITAL, G.M.C. BHAVNAGAR."

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**Article Received on 16/04/2017** **Article Revised on 07/05/2017** **Article Accepted on 28/05/2017**

## ABSTRACT

**Objective:** To study the clinical profile and etiology of altered consciousness.

To re-emphasize the importance of Glassgow coma scale and bedside Sriraj Stroke Score for patients of possible cerebrovascular accidents.

To evaluate individual clinical and other bedside parameters as independent predictors of prognosis in any case of altered consciousness.

To evaluate incidence of morbidity and mortality in patients of altered consciousness.

**Materials and methods:** The present study includes cases of non traumatic alteration is consciousness is due to various causes admitted in Government hospital during the period 1 June 2015 to 31 May 2016. 150 patients formed the study material. **PATIENT POPULATION:** The study was conducted on 150 patients with medical coma and altered consciousness. Criteria for selection of cases –

(1) All patients, both male and females, over 12 years old who were admitted to hospital in altered state of consciousness.
(2) Patients who became comatose after admission of 6 hours were also considered for inclusion.

**CRITERIA FOR EXCLUSION**

(1) To eliminate from consideration the transient unresponsiveness of syncope, patients with coma of less than 6 hourly were excluded.
(2) Comatose patients with history suggestive of concussion without obvious external had injury.

**PATIENT POPULATION**

The study was conducted on 150 patients with medical coma and altered consciousness. Criteria for selection of cases –

(3) All patients, both male and females, over 12 years old who were admitted to hospital in altered state of consciousness.
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**CRITERIA FOR EXCLUSION**

(3) To eliminate from consideration the transient unresponsiveness of syncope, patients with coma of less than 6 hourly were excluded.
(4) Comatose patients with history suggestive of concussion without obvious external had injury.

- **Results:** Minority of patients of age above 50 years of age fall in poor outcome group. We observed a direct correlation between relation of mortality with low GCS scale.
- Direct co relation between duration of coma and poor outcome.
- There is high sensitivity of diagnosis of infarct and hemorrhage from SS Score.
- Metabolic encephalopathy was the commonest cause of coma followed by vascular events.
- Admission to study, absence of corneal reflexes, absent doll's eye,absent papillary light reaction were each associated with poor outcome.

**CONCLUSION:** we observed Metabolic encephalopathy was the commonest cause of coma followed by vascular events. Hypertension and debilities mellitus was common risk factor for vascular accident. Most patients were presented with more than one symptoms on admission. We identified that the majority of the patients were male who belonged to the age group 51-70 years. Cerebro vascular accident is not uncommon in younger age group.

## INTRODUCTION

The human nervous system is the organ of consciousness, cognition, ethics and behaviour.
This quality makes him superior to the other animals and allows dominate the world.
The unnatural situation of reduced alertness and responsiveness represents a continuum that in severest from is called coma. Confusional states and coma are among the most common problem in any hospital.

In fact, no acute problem in\ clinical medicine arouses much anxiety and apprehension as does this patients. There is always an urgency to determine underlying disease process and to protect brain against more serious or irreversible damage.

Due to heterogenicity of causes, prediction of outcome in these patients is difficult and unfortunately no single clinical laboratory or electrophysiological parameter exists to determine their outcome. Even investigative procedure notably – computerized brain scanning, magnetic resonance imaging are prohibitively expensive with predictive value not better than that of clinical signs.

The prediction of outcome must be considered in reference to long term care and medical resources. Extraordinary care of patients with severe brain damage adds substantially to medical costs but may do little to improve chances of functional recovery.

Hence, prime objective of our study is to re-emphasize the role of few important clinical signs on presentation, in predicting prognosis in all patients of alteration of consciousness and also to put forward an effect to standardize examination protocol in such patient so as to eliminate as much observer variability as possible.

## MATERIALS AND METHODS

The present study includes cases of non traumatic alteration is consciousness is due to various causes admitted in Government hospital during the period 1 June 2015 to 31 May 2016. 150 patients formed the study material.

## PATIENT POPULATION

The study was conducted on 150 patients with medical coma and altered consciousness.

## INVESTIGATIONS

Routine investigations–Haemoglobin estimation, total and differential count, ESR, Random blood sugar, blood urea, urine sugar and albumin were done in all patients.

ECG and fundoscopic examination was done in all. Other specific investigations were carried out as per presentation of patient. These included blood and urine for metabolic, toxic, drug, induced encephalopathies, CSF examination of infections and subarachnoid haemorrhage, fundus.

Blood was analysed for glucose, liver and renal functions.
CT/MRI scan (brain) were carried out whenever indicated.

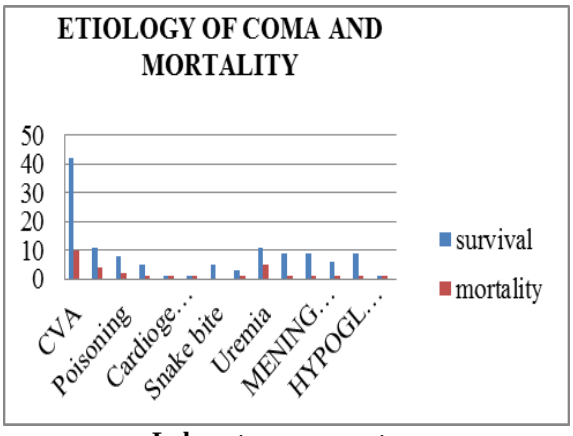
**Table 1 Inclusion, Exclusion & Diagnostic criteria for patients in present study**

| | |
|---|---|
| **Inclusion Criteria** | Age >12 yrs |
| | (1) All patients, both male and females, over 12 years old who were admitted to hospital in altered state of consciousness.<br>(2) Patients who became comatose after admission of 6 hours were also considered for inclusion. |
| **Exclusion Criteria** | Patient with age <12yrs |
| | (1) To eliminate from consideration the transient unresponsiveness of syncope, patients with coma of less than 6 hourly were excluded.<br>(2) Comatose patients with history suggestive of concussion without obvious external had injury |

## RESULTS AND DISCUSSION

**Clinical Presentation**

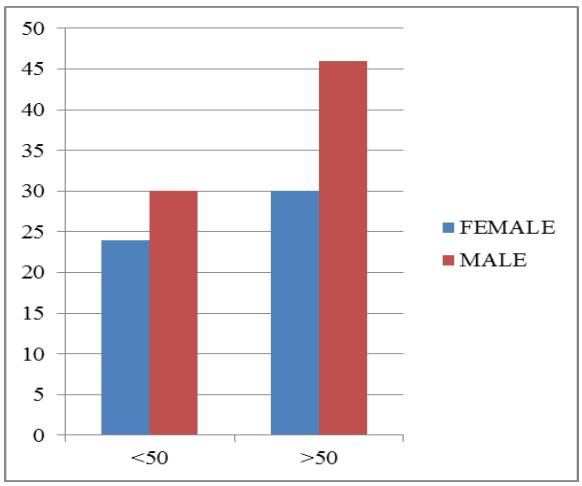
- ⊡ Altered state of sensorium
- ⊡ Headache
- ⊡ Vomiting
- ⊡ Hemiparesis
- ⊡ Fever
- ⊡ convulsions




**Laboratory parameters**

**TABLE-1 AGE DISTRIBUTION**

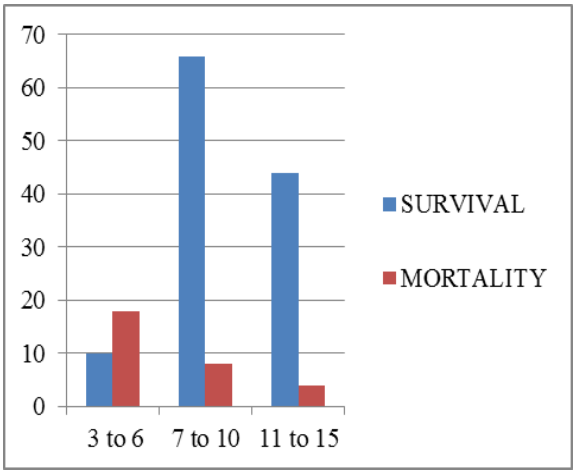
| AGE | SEX | | TOTAL |
|---|---|---|---|
| | FEMALE | MALE | |
| <50 | 24( 44%) | 30(56%) | 54 |
| >50 | 30(40%) | 46(60%) | 76 |
| Total | 54 | 66 | 150 |




There were 54 patients who were less than 50 years and among which 24 (44%) were female and 30(56%) iwere male. 76 patients were above 50 years and among which 30 (40%) patients were female and 46(60%) were male.

**TABLE 2: MORTALITY AMONG VARIOUS STATE OF CONSCIOUSNESS**

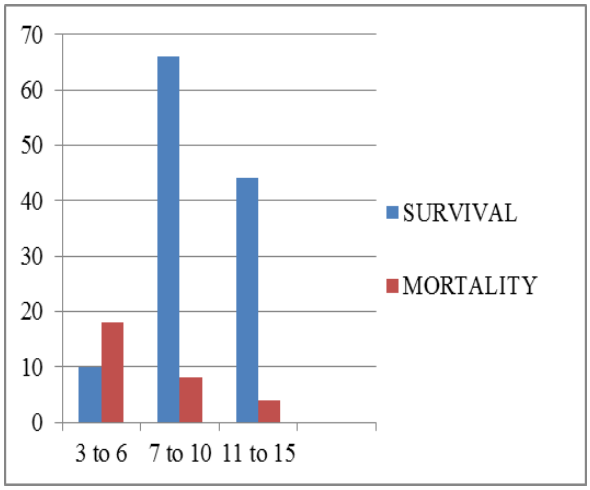
| Onset | OUTCOME | | TOTAL |
|---|---|---|---|
| | SURVIVAL | MORTALITY | |
| DROWSY | 86(96%) | 4(4%) | 90 |
| STUPOR | 24(75%) | 8(25%) | 32 |
| COMA | 10(36%) | 18(64%) | 28 |




There were 90 patients who have drowsiness, out of which 86(96%) have survival and 4(4%) have died. 32 patients were stupor, out of which 24(75%) patients 32 have survival and 8(25%) have died. 28patients had coma, out of which 10(36%) patients have survival and 18(64%) have died. The significance level obtained was $p<0.00132$. The significance level obtained was $p<0.001$. This clearly shows that all patients with coma had poor prognosis as compared to patients with drowsiness and stupor. *P* value is STATISTICALLY SIGNIFICANT.

**TABLE-3: GLASSGOW COMA SCALE**

| GCS | OUTCOME | | TOTAL |
|---|---|---|---|
| | SURVIVAL | MORTALITY | |
| 3 to 6 | 10 | 18 | 28 |
| 7 to 10 | 66 | 8 | 74 |
| 11 to 15 | 44 | 4 | 48 |
| Total | 120 | 30 | 150 |




Maximum number of patients fall into 2nd category i.e. 7-10.i.e., a total of 74 patients out of which 66(90%) patients had survival and only 8 (10%)had mortality. 3rd category, i.e. 11-15, there were 48 patients among which 44 (91%) had survival and 4 (9%) had mortality.There were 28 patients with GCS between 3-6 among which 10 (36%) had survival and 18 (64%) had mortality. P value <0.05 STATISCALLY SIGNIFICANT.

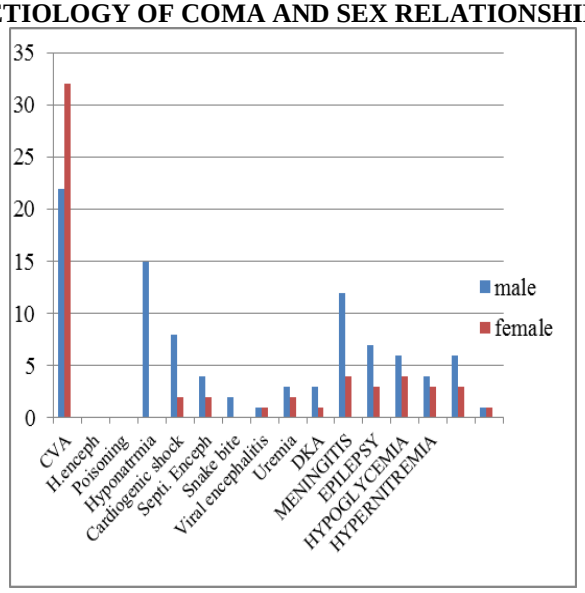
**TABLE-4: ETIOLOGY OF COMA AND MORTALITY**

| CAUSES | OUTCOME | | TOTAL |
|---|---|---|---|
| | SURVIVAL | MORTALITY | |
| CVA | 42 | 10 | 52 |
| H.enceph | 11 | 4 | 15 |
| Poisoning | 8 | 2 | 10 |
| Hyponatremia | 5 | 1 | 6 |
| Cardiogenic shock | 1 | 1 | 2 |
| Septicemia | 1 | 1 | 2 |
| Snake bite | 5 | 0 | 5 |
| Viral encephalitis | 3 | 1 | 4 |
| Uremia | 11 | 5 | 16 |
| DKA | 9 | 1 | 10 |
| MENINGITIS | 9 | 1 | 10 |
| EPILEPSY | 06 | 1 | 7 |
| HYPOGLYCEMIA | 9 | 1 | 9 |
| HYPERNATREMIA | 1 | 1 | 2 |
| Total | 120 | 30 | 150 |

**TABLE-5: ETIOLOGY OF COMA AND SEX RELATIONSHIP**

| CAUSES | SEX | | TOTAL |
|---|---|---|---|
| | MALE | FEMALE | |
| CVA | 22 | **32** | 52 |
| H.enceph | 15 | 0 | 15 |
| Poisoning | 8 | 2 | 10 |
| Hyponatrmia | 4 | 2 | 6 |
| Cardiogenic shock | 2 | 0 | 2 |
| Septi. Enceph | 1 | 1 | 2 |
| Snake bite | 3 | 2 | 5 |
| Viral encephalitis | 3 | 1 | 4 |
| Uremia | 12 | 4 | 16 |
| DKA | 7 | 3 | 10 |
| MENINGITIS | 6 | 4 | 10 |
| EPILEPSY | 4 | 3 | 7 |
| HYPOGLYCEMIA | 6 | 3 | 9 |
| HYPERNITREMIA | 1 | 1 | 2 |
| Total | 92 | 58 | 150 |

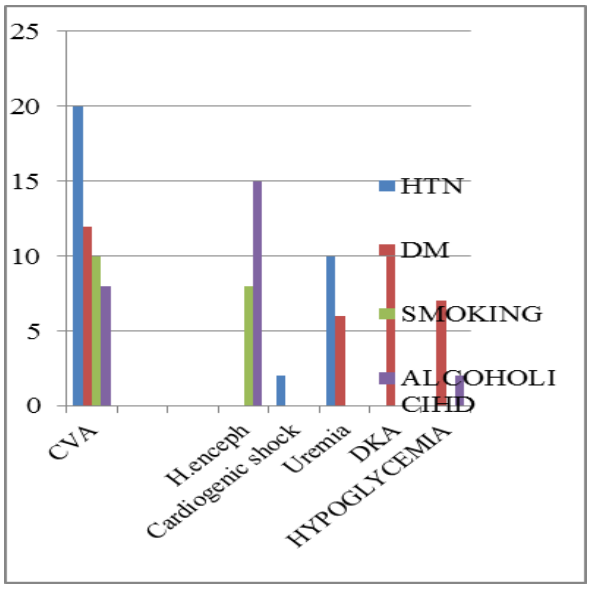
**ETIOLOGY OF COMA AND SEX RELATIONSHIP**




52 patients have CVA, out of which 22(42%)were male and 32(78%) were female. Total 10 patients of meningitis, out of which 6(60%) were male and 4(40%) were female. 16 patients of uremia, out of which 12(75%) were male and 5(33%)were female. Out of 17 patient of metabolic disease 11(63%) were male and 6(27%) were female. Out of 150 patient 92(63%) were male and 58(27%) were female.

**TABLE-6: ETIOLOGY OF COMA AND RISK FACTOR**

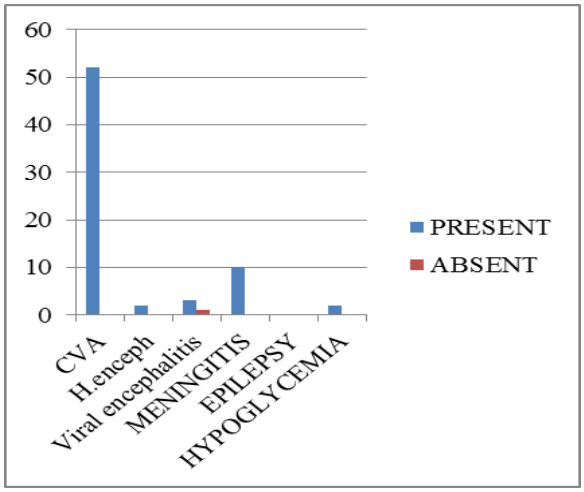
| CAUSES | RISK FACTOR | | | | | TOTAL CASE |
|---|---|---|---|---|---|---|
| | HYPERTENSION | DIABETES MELLITU | SMOKING | ALCOHAL | IHD | |
| CVA | 20 | **12** | 10 | 8 | 16 | 52 |
| H.enceph | - | 0 | 8 | 15 | - | 15 |
| Cardiogenic shock | 2 | 0 | - | - | 2 | 2 |
| Uremia | 10 | 6 | - | - | - | 16 |
| DKA | - | 10 | - | - | - | 10 |
| HYPOGLYCEMIA | - | 7 | - | 2 | - | 9 |




52 patients have CVA, out of which 22 patient were HTN,12 were DM, 10 patient were smoking, 16 patient were IHD as a risk factor.15 patient ofhepatic encephalopathy had alcohal intake. Total 10 patients of meningitis, out of which 6(60%) were male and 4(40%) were female.out of 16 patients of uremia, 10 were HTN and 6 have DM. were male. Out of 2 patient of cardiogenic shock 2 were IHD. out of 9 patient of hypoglycemia 7 patient had DM.

**TABLE-7: ETIOLOGY OF COMA AND NEUROIMAGING**

| CAUSES | NEUROIMAGING(CT/MRI)FINDING | | TOTAL |
|---|---|---|---|
| | PRESENT | ABSENT | |
| CVA | INFARCT-28<br>HAEMORRHAGE-17 | **7** | 52 |
| H.enceph | Hyper intense signal in carpus callosum etc. | - | - |
| Viral encephalitis | Hyper intensity signal-3 | 1 | 4 |
| MENINGITIS | Hyper intensity signal and leptomeningealinhancement -10 | - | 10 |
| EPILEPSY | NORMAL | - | 7 |
| HYPOGLYCEMIA | Hypoxemic injury-2 | - | - |
| Total | 62 | 8 | |




52 patients had CVA, out of which 35 were infarct in neuroimaging and 17 patients were haemorrhage.out of 15 patients of hepatic encephalopathy 2 were hepatic encephalopathy. Total 10 patients of meningitis, 10 patients were meningeal inflammation out of 9 patients of hypoglycemia 2 patients were hypoxemic injury.

**TABLE-8: ETIOLOGY OF COMA AND SYMPTOLOGY**

| | | SYMPTOMS | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | SEIZURE | VOMITING | HEADACHE | FEVER | FOCALDEFICI | |
| **CVA** | **ISCHEMIC CV STROKE** | **10** | **2** | **4** | **-** | **32** | **32** |
| | HAEMORRHAGE | 10 | 14 | 12 | 8 | 17 | 17 |
| H.enceph | | 6 | 2 | - | 8 | - | 15 |
| Poisoning | | - | 6 | - | 4 | - | 10 |
| Hyponatrmia | | 4 | 2 | - | - | - | 6 |
| Cardiogenic shock | | - | 1 | - | - | - | 2 |
| Septi. Enceph | | - | 1 | - | 2 | - | 2 |
| Snake bite | | - | 2 | 3 | 2 | - | 5 |
| Viral encephalitis | | 2 | 1 | 2 | 4 | - | 4 |
| Uremia | | 8 | 6 | 3 | 4 | - | 16 |
| DKA | | - | 8 | 6 | 1 | - | 10 |
| MENINGITIS | | 7 | 5 | 2 | 10 | 2 | 10 |
| EPILEPSY | | 7 | - | 3 | 4 | - | 7 |
| HYPOGLYCEMIA | | 6 | - | 3 | 2 | - | 9 |
| HYPERNATREMIA | | - | 2 | - | - | - | 2 |
| Total | | | | | | | 150 |

**Haemorrhagic cv stroke have more symptology as compared to ischemic cv stroke and other etiology of altered sensoriumsuch as seizure, fever, vomiting etc.**

**TABLE-9: DOLL'S EYE MOVEMENT ON ADMISSION**

| DOLL'S EYE | OUTCOME | | TOTAL |
|---|---|---|---|
| | GOOD | POOR | |
| Present | 80 | 25 | 105 |
| Absent | 10 | 35 | 45 |
| Total | 90 | 60 | 150 |

Doll's eye movement were present in 105 patients on admission out of which 80(76%) has good outcome and 25(24%) has poor outcome. Among 45 patients who shows no doll's eye movement 10(22%) has good outcome and 35 (88%) has poor outcome. Thus, this finding also has high predictive value regarding outcome. P<0.001 STATISTICALLY SIGNIFICANT

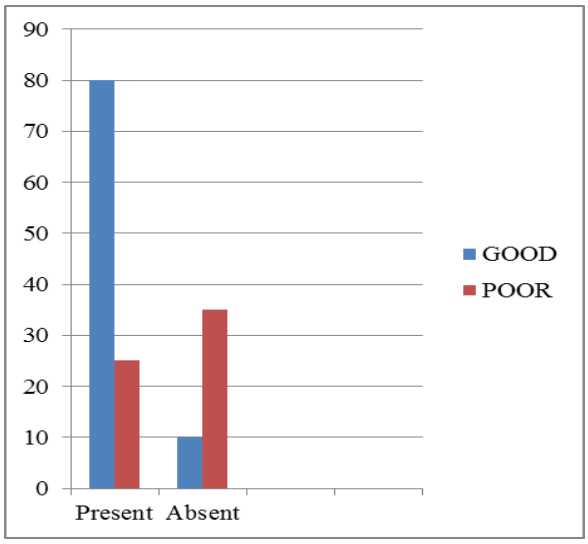
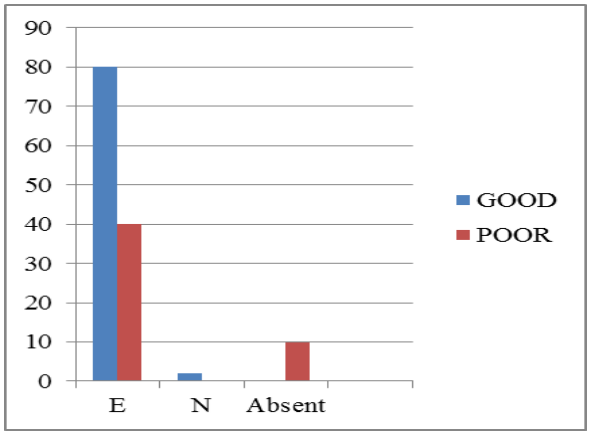



**TABLE-10: PLANTER REFLEX**

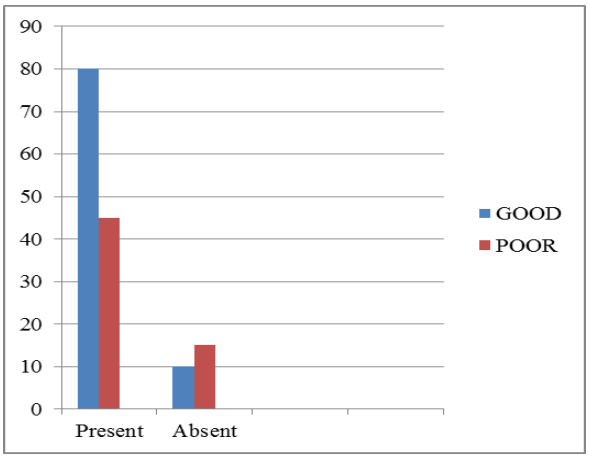
| PLANTER | OUTCOME | | TOTAL |
|---|---|---|---|
| | GOOD | POOR | |
| E | 80 | 40 | 120 |
| N | 02 | - | 2 |
| Absent | 0 8 | 10 | 18 |
| Total | 90 | 50 | 150 |




The planter reflexes were extensor in 120 people. Out of which 80(67%) were good outcome and 40(33%) has poor outcome. It was normal in 2 patients out of which 2 (100%) has good outcome. Planters were absent in 18 patients out of which 8 (45%) has good and 10(55%) have poor outcome. P value is 0.002(<0.005) STATISTICALLY SIGNIFICANT

**TABLE: 11 PUPILLARY REACTION TO LIGHT**

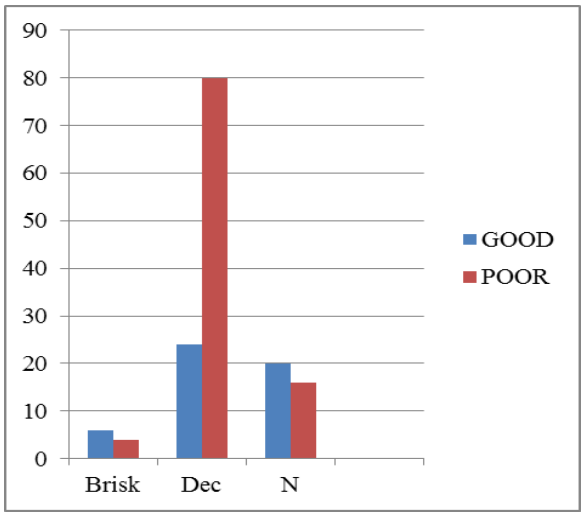
| PUPILS – L.R. | OUTCOME | | TOTAL |
|---|---|---|---|
| | GOOD | POOR | |
| Present | 80 | 45 | 125 |
| Absent | 10 | 15 | 25 |
| Total | 90 | 60 | 150 |




Pupillary reaction was present in 125 patients, out of which 80(64%) patients have good outcome and 45(36%) have poor outcome. It was absent in 25 patients, out of which 10(25%) were good outcome and 15(75%) were poor outcome. P value is 0.06(>0.05) STATISTICALLY INSIGNIFICANT

**TABLE 12: DEEP TENDON REFLEXES**

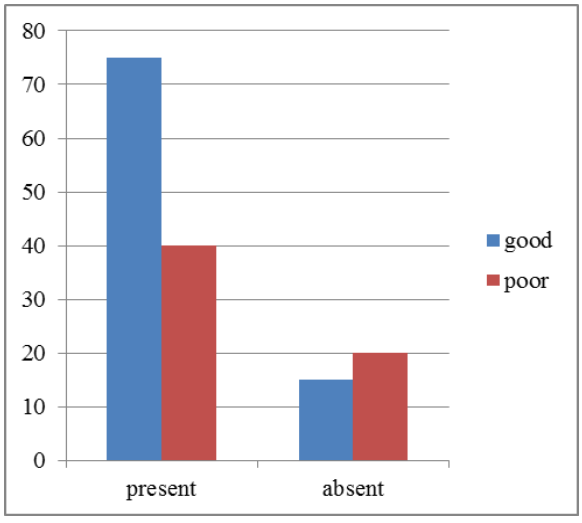
| DEEP TENDON REFLEX | OUTCOME | | TOTAL |
|---|---|---|---|
| | GOOD | POOR | |
| Brisk | 20 | 10 | 30 |
| Dec | 55 | 35 | 90 |
| N | 15 | 5 | 20 |
| Total | 90 | 50 | 150 |




The Deep tendon reflex were found normal in 30 patients, out of which 20(67%) were good outcome and 10(33%) were bad outcome. The DTRs were decreased in 90 patients, out of which 55(61%) were good outcome and 35(39%) were bad outcome. They were brisk in 20 patients out of which 15 (75%) were good outcome and 5(25%) were poor outcome. P value is significant (P=0.037<0.05).

**TABLE-13: CORNEAL REFLEX AMONGST COMATOSE PATIENTS**

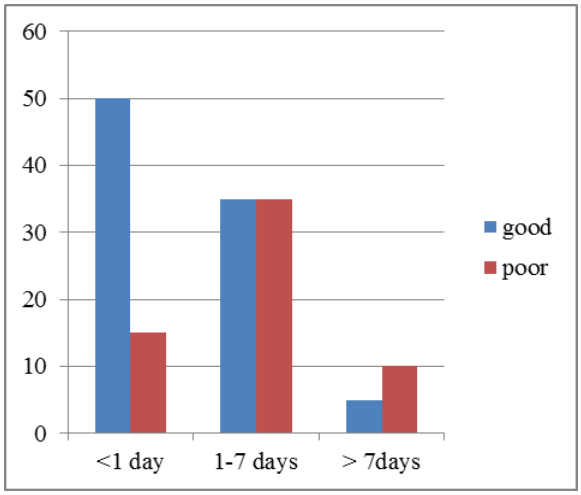
| CORNEAL REFLEX | OUTCOME | | TOTAL |
|---|---|---|---|
| | GOOD | POOR | |
| Present | 75 | 40 | 115 |
| Absent | 15 | 20 | 35 |
| Total | 90 | 60 | 150 |




On admission corneal reflex was present in 115 patients out of which 75(61%) were good outcome and 40(39%) has poor outcome. Corneal reflex was absent in 35 patients out of which only 15(43%) were good outcome and 20(57%) were bad outcome. Significance of predictability of this is very high (p<0.001) STATISTICALLY SIGNIFICANT.

**TABLE-14: TOTAL DURATION OF UNCONSCIOUSNESS AND ALTERED SENSORIUM**

| Duration | Outcome | | Row Total |
|---|---|---|---|
| | Good | Poor | |
| <1 day | 50 | 15 | 65 |
| 1-7 days | 35 | 30 | 65 |
| >7 days | 5 | 15 | 20 |
| Total | 90 | 60 | 150 |



The patients were classified into 3 groups according to the duration of unconsciousness.

In first groupout of 65 patients 50(67%) patient. were good outcome and 15 (33%) patients have poor outcome.

In second group out of 65 patients 35(54%) patients were good outcome and 30(46%) patients were poor outcome.

In third group of 20 patients 5(25%) patients were good outcome and 15 (75%) patients have poor outcome. $p<0.05$ is STATISCALLY SIGNIFICANT

**TABLE-15: RECOVERY FROM COMA**

| OUTCOME CATEGORY | NUMBER OF PATIENTS |
|---|---|
| GOOD RECOVERY | 40% (60) |
| MODERATE DISABILITY | 20% (30) |
| SEVERE DISABILITY | 15% (23) |
| VEGETATIVE STATE | 5% (7) |
| DEATH | 20% (30) |

In present study, outcome categories were broadly considered as – (1) GOOD-good recovery, moderate disability.

**TABLE-16: SIRIRAJ STROKE SCORE IN PATIENTS WITH ACUTE STROKE**

| SIRIRAJ STROKE SCORE | PATIENTS WITH ICH | PATIENTS WITH INFARCTION |
|---|---|---|
| Below – 1 | 0 | 32 |
| Between -1 and 1 | 0 | 3 |
| Above 1 | 17 | 17 |
| Total | 6 | 16 |

| | | |
|---|---|---|
| Sensitivity for hermorrhage (score above 1) | 17/17- | 100% |
| Sensitivity for infarct (score below -1) | 32/35- | 92% |
| Accuracy | 49/52- | 94% |

**SALIENT FEATURES**

Most commonly affected patients were middle-aged males coming from lower socioeconomic class. Most common etiology for PHT was alcoholic cirrhosis of liver.

Another important inference of our study is the relevance of regular use of the Glasgow coma scale in evaluation of patients, the advantage of such scoring in prediction of outcome and patient monitoring being several e.g.

(i) The Glasgow coma scale encompasses the most important components of conscious behaviour.
(ii) Since a separate score in given to even minor changes in eye movements or motor or verbal responses, there is avoidance of most undesired observers variability in patient evaluation.

This scoring system enables the examiner to obtain an easy quantitation serialwise, of the patients consciousness level.

(4) Irrespective of etiology of coma, brainstem reflexes provide a reliable indicator of prognosis, Unfavourable signs or combination of signs noted in present study include:
(a) Absent Doll's eye movement
(b) Poor motor responses on the day of final outcome
(c) Pupillary reaction on the day of final outcome.
(d) Plantar response on the day of final outcome.

**CONCLUSION**

Following are the conclusions arrived at –
Clinical profile –

Age and Sex of the patient are weak predictors of outcome.
Outcome of patients is influenced by three major clinical factors.
Cause of coma
Depth of coma
Duration of coma

Early recovery of consciousness, significantly increase chances of achieving independent function.

**Etiology**

Vascular and CNS infections were most important cause of coma in present study followed by hepatic encephalopathy.

However patients with metabolic cause and poison were found to have most favorable outcome with treatment. A relatively poorer outcome was observed in patients with CNS infections, but patients who fared worst were those with haemorrhagiccerebrovascular stroke.

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