

ROLE OF GLASGOW COMA SCALE IN PEDIATRIC NON-TRAUMATIC COMASanjeev Biradar¹**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: BACKGROUND: Acute non-traumatic coma is a common problem in pediatric practice accounting for 10-15% of all hospital admission and is associated with significant morality. Assessment of the severity of coma is essential to comment on the likelihood of survival in comatose children. **OBJECTIVES:** To assess outcome in pediatric non-traumatic coma with role of Glasgow Coma Scale and Modified Glasgow Coma Scale. **METHODS:** 30 cases of non-traumatic coma between 2 months to 12 years, coma severity were assessed by using Glasgow Coma Scale and Modified Glasgow Coma Scale. A score of less than 8 and more than 8 were used for analysis of outcome. **RESULTS:** Out of 30 Cases, 5 cases expired (16.66%), 2 cases were discharged against medical advice (6.67%, 23 cases improved and discharged, among these, 3 cases were discharged with complication (76.67%). Overall mortality was (16.66%) (5/30), males outnumbered females in frequency with ratio of 1.41:1. CNS infection accounted for almost about 75%. **CONCLUSION:** Children with GCS and MGCS scores of less than 8 have poor prognosis and very high probability of death. Those with GSC score of more than 8 have good prognosis. Identification of these cases at the outset can help prepare of outcome to the family.

KEYWORDS: Glasgow Coma Scale; Modified Glasgow Coma Scale; Coma.

INTRODUCTION: Non-Traumatic Coma in childhood is an important Pediatric emergency and a common presentation in pediatric patients. It has been used to assess the long term and neurological outcome in comatose children and which is of Particular concern to patients & Physician. Status at the time of presentation is likely predictors of outcome. A better understanding of etiology and outcome is essential to help improve the approach & plan for the management. In the past various scores have been used to assess the severity of coma & to predict its outcome MGCS is widely used for assessing the severity of pediatric coma.

Among various scores used, the modified Glasgow Coma scale (MSGC) inspite of its various drawbacks, has been widely used for assessing pediatric coma. Though only few studies are available. This study was conducted to assess the GCS & MGCS, and its components in children with acute non-traumatic coma and identification of this case at the outsets can help prepare of outcome to the family.

METHODS: Children admitted between the age group of 2 months to 12 years with non-traumatic coma in Bidar Institute of Medical Sciences, Bidar from September 2010 to January 2013. Total cases studied were 30 cases in non-traumatic coma formed the subject of this study. All The children admitted with non-traumatic coma where included from September 2010 to January 2013. Age between 2 months to 12 years. Children were assessed by using Glasgow Coma Scale and Modified Glasgow Coma Scale. Standard case definitions were used to identify the etiology of coma. Childrens < 2 months and > 12 years were excluded from the study and Children presenting with traumatic coma.

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Following were the criteria for the selection of cases. Patients presenting with symptoms such as fever, headache, vomiting, altered sensorium, convulsions, icterus, ingestion of toxin, level of consciousness (Confusion, stuporous, drowsy and coma).

The detailed neurological and physical examination were carried out, coma severity was assessed by using Glasgow Coma scale. In the birth history, detailed antenatal and post-natal history was stressed to know about any predisposing factors responsible for the present illness.

Any neurological or other complications occurring in the course of the study along with morbidity and mortality were noted.

RESULTS: 30 children were studied with non-traumatic coma during the study period intracranial infection was the most common cause of coma in this study forming the largest group.

It is interesting to note that 9 (30%) children with tuberculous meningitis presented with acute coma. 5 children presented with viral encephalitis (16.74%), 1 with enteric encephalopathy (3.30%), 1 with measles encephalopathy (3.30%), 3 children present with pyogenic meningitis (10%), DKA 3 cases (10%), status epilepticus 2 cases (6.6%), cerebral malaria 2 cases (6.6%) and Reye's syndrome (3.3%), hepatic coma 1 (3.3%), hypoglycemic seizures 1 (3.3%), atypical febrile convulsion 1 (3.3%)

Mortality was highest in the intracranial infection (14.66%).

The number of cases between the age group of 2 months to 5 years was 40% followed by 5 to 10 years – 36% and 10 to 12 years, 23.33%

In the present study children were more effected between the age group of 2 months to 5 years about 12 children (40%). In a study by NayanPrabha PC.Nalini P, TironmourounganceSerane V at JIPMER, the children were more effected between the age group of 3 months to 36 months, about 100 cases, the total study was in 270 children.

In another study by ArunBansal, Sunit C Singh, Pratibha D Singh. Khandelwal N and Ramesh S at Postgraduate Institute of Medical Education & research Chandigarh, the mortality rate was 74% between 4-5 years.

It is observed in this study that majority of cases improved without complication and has accounted for about 76.67%, 2 patients discharge against medical advice and 5 patients expired. Among the expired cases, 3 cases were TBM, 1 was Reye's syndrome and 1 viral encephalitis, accounting for 16.66% of mortality.

Among the 5 patients expired, all the patients had a GCS score of <8 at the time of admission. So the likelihood of death in patients with GCS score less than < 8 was much higher than when the GCS score was > 8. Studies in both traumatic and non-traumatic coma have indicated that morality is high when the GCS score is less than 8.

In a study by Prabha et al (JIPMER) a low total MGCS score was found to be associated with adverse short-term outcome. The death in patient with MGCS was less than < 8 was much higher than when the MGCS was < 8 (odds ratio 78.9, relative risk 27.1). The morality was highest in the metabolic group (48%) intracranial infection and encephalopathies were 36.6% and 30.5% respectively.

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Present Study		ArunBansal et al ¹		Prabha et al ²	
Age Group	No. of Cases	Age Group	No. of Cases	Age Group	No. of Cases
2 Months5 years	12	7 months – 1year	15	3 – 36 months	100
5 – 10 Years	11	1 – 3 years	25	37 – 72 months	74
10 – 12 years	7	4 – 5 years	34	73 – 108 months	54
		6 – 12 years	26	109 – 144 months	42

Table I: Age Distribution of cases

	Present study (n=30)	Vijay Kumar et al ³ (n=328)	Ogunmekar et al ⁴ (Nigeria) (n=225)	Seshia et al ⁵ (Canada) (n=75)	Sofiah et al ⁶ (Malaysia) (n=116)
CNS infection	70.00	50.00	41.80	34.70	69.00
Septicemia	--	--	4.00	4.00	--
Toxic and Metabolic	19.99	12.00	19.10	14.70	13.00
Status epilepticus	6.60	27.00	19.00	14.70	--
Hypoxia	--	4.00	4.00	24.00	5.00
IC Bleed	--	--	--	4.00	3.00
Miscellaneous And unknown	6.60	7.00	--	4.00	9.50
Overall mortality	16.66	12.00	26.70	26.70	35.70

Table II: Comparison of causes and Mortality of Acute Non- Traumatic Coma in Childhood Reported by various Authors

DISCUSSION: Acute non-traumatic coma is a common problem in pediatric practice accounting for 10-15% of all hospital admission and is associated with significant mortality. In a prospective study the authors have therefore examined the etiology, clinical signs and severity of non-traumatic coma in children with a view to define predictors of outcome. The Glasgow Coma Scale is a standardized system developed initially in traumatic coma to assess the degree of coma.⁷ It has gained widespread use as it is highly reproducible, can be quickly performed at the bedside and provides useful information on the progress and prognosis of a comatose individual.⁸

In the present study total numbers of cases of non-traumatic coma with the role of Glasgow Coma Scale were 30 cases.

In the present study a low total GCS score was found to be associated with adverse short-term outcome. The likelihood of death in patients with GCS less than 8 was much higher than when the GCS was 8 i.e., (16.66%) had < 8 and 63.24% had > 8. Studies in both traumatic and non-traumatic coma have indicated that mortality is high when the GCS is less than 8.⁹

In the present study of 30 cases, 9 cases had TBM, viral encephalitis – 5 enteric encephalopathy – 1, measles encephalopathy – 1, 3 pyogenic meningitis, 3 DKA, epilepsy 2, cerebral

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coma 2, Reye's syndrome 1, hypoglycemic seizures 1, and 1 case of atypical febrile convulsion, 1 hepatic coma.

In the present study, CNS infection accounted for almost about 75%, so it was observed that CNS infections were the commonest cause of non-traumatic coma.

In the present study, deaths occurred within the 24 hours of admission using the GCS we could identify children at highest risk of death even on admission. An earlier study showed that 44.2% death occurred within 72 hours of admission and this case could be identified on admission with the help of GCS score.¹⁰

In the present study, 3 cases of DKA whose GCS was < 8 on admission but with prompt management all the 3 cases got improved and discharged. When compared to other studies the morality in metabolic causes was slightly lower.

In our study we conclude that outcome of coma was dependent on the etiology. This is in contrast to other authors who have concluded that outcome of coma was dependent on the etiology.^{11,12,13} it is important to realize that studies on prognosis of coma are effected by certain issues like belt-fulfilling nature of the underlying diseases, host response and treatment strategies and these are likely to have a significant effect on the outcome.

The present study concludes that children with GCS score of less than 8 on admission have the worst prognosis and a very high probability of death.

Those with GCS scores of more than 8 at the time of admission have a good prognosis and better improvement. Identification of these cases at the outset can help prepare the treating physician to plan critical care referral and to give a preliminary assessment of outcome to the family.

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