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Original Research Article

Morbidity Pattern and Outcome of Patients Admitted in Paediatric Intensive Care at Late Shri Lakhi Ram Agrawal Memorial Government Medical College Raigarh Chhattisgarh, a Tertiary Care Hospital

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Abstract:

Background: This study was carried out with the objectives to estimate prevalence and distribution of various types of diseases among Paediatric patients admitted in Paediatric ICU of Late Lakhi Ram Agrawal Memorial Govt Medical College from Aug 2022 to Dec 2023 and to estimate outcome of these patients during study period.

Methods: A retrospective study was carried in children admitted in PICU from Aug 2022 to December 2023 when a total of 831 patients were admitted.

Results: Of 837 cases studied, 445(53.2%) were males and 392 (46.8%) were females. The male to female sex ratio in the entire study group was 1.2:1.0. Of 837 cases studied, 231(27.6%) had age below 1 year, 268 (32.0%) had age between 2-5 years, 222(26.5%) had age between 6-10 years and 116(13.9%) had age above 10 years. Maximum number of patients 499 (59.6%) belonged below 5-year age group. The most common system involved was central nervous system which was observed in 196(23.4%) cases. This is followed by respiratory system 190 (22.7%) and Haematology 149 (17.8%). Among the cases the most common diagnosis was Seizure which was observed in 170 (20.3%) of cases, followed by Pneumonia that was observed in 125 (14.9%) of cases.

Conclusions: Of 837 cases studied, 706 (84.4%) were discharged, 66 (7.9 %) were referred, 47(5.6%) expired and 18 (2.1%) went leave against medical advice (LAMA). Majority of mortality occurred among children aged <1-year olds 7.8% followed by 1-5 years old 5.8% deaths.

Keywords: PICU, Morbidity, Outcome, Mortality.

Introduction

A paediatric intensive care unit (PICU) is an area within a hospital specializing in the care of critically ill infants, children, teenagers, and young adults. Goran Haglund is credited with establishing the very first paediatric ICU in 1955; this PICU was located at Children's Hospital of Goteborg in Sweden [1,2]. The specialty grew out of a need for increasingly complex postoperative management, in the face of advances in surgical and medical subspecialties, and the development of sophisticated life-support technology [1].

Paediatric intensive care units (PICU) have brought about dramatic increase in the survival of critically ill children. PICU is an important component in any tertiary care centre. [3] Paediatric patients who are critically ill and those who need advanced airway, respiratory and hemodynamic support are admitted in PICU so that the outcome is improved. The principal objective of paediatric critical care is not only to decrease the mortality but also to restore the child who is suffering from a life-threatening condition to health with a minimum pain anxiety and complications and to provide comfort and guidance to the child's family [4].

The knowledge of the clinical profile and outcome of critically ill children helps in planning health policies. [5]

Aim of study

The aim of present study is to estimate morbidity pattern and outcome of patients admitted in Paediatric Intensive care Unit of Late Lakhi Ram Agrawal Memorial Govt Medical College from Aug 2022 to Dec 2023.

Objectives of the study

1. To estimate prevalence and distribution of various types of diseases among Paediatric patients admitted in Paediatric ICU.
2. To estimate outcome of these patients during study period.

Methods

This is a retrospective study based on the data collected from the Paediatric Intensive Care Unit (PICU) at Sant Baba Guru Ghasidas hospital and Late shri Lakhi ram Agrawal smriti Government Medical College Raigarh from the August 2022 to Dec 2023. Study population was all the patients admitted in the PICU during this study period.

Inclusion Criteria: All patients admitted in PICU during study period.

Exclusion Criteria: None Excluded

Statistical Methods: The hospital is accredited with Ten bedded modern PICU which admits paediatric patient's ≤14 years of age. All patients in the unit were treated according to the written standard protocols.

PICU records of all admissions, transfer out, discharges, leave against medical advice (LAMA) and death were noted and analysed for the purpose of study. Data included Age, gender, diagnosis, duration of stay at PICU and outcome was taken for study. The entire data was entered in MS Excel before its statistical analysis then analysed using Statistical Package for Social Sciences (SPSS version 21.0, IBM Corporation, USA) for Microsoft Windows 11.

Results

Over a period of 17 months of the study, total of 837 patients were admitted in Paediatric Intensive Care Unit (PICU) at Sant Baba Guru Ghasidas hospital and Late shri Lakhi ram smriti Government Medical College Raigarh.

Table 1: Age Distribution

Age group in (years)	Number of Cases	Percentage
< 1 years	231	27.6%
1- 5 years	268	32.0%
6-10 years	222	26.5%
>10 years	116	13.9%
Total	837	100.0%

Table 2: Gender Distribution

Gender	Number of Cases	Percentage
Male	445	53.2%
Female	392	46.8%
Total	837	100.0%

Of 837 cases studied, 231(27.6%) had age below 1 year, 268 (32.0%) had age between 2-5 years, 222(26.5%) had age between 6-10 years and 116(13.9%) had age above 10 years. Maximum number of patients 499 (59.6%) belonged below 5-year age group, which can be attributed to lesser immunity among younger children.

Of 837 cases studied, 445(53.2%) were males and 392 (46.8%) were females. The male to female sex ratio in the entire study group was 1.2:1.0

Of 837 patient's majority of the children 633 (75.6%) stayed for 2-7 days, 119 (14.2%) of children stayed ≤ 1 day. However, 222(10.2%) children needed >7 days stay in PICU. Of 837 cases studied, the most common system involved was central nervous system which was observed in 196(23.4%) cases. This is followed by respiratory system 190 (22.7%) and Haematology 149 (17.8%). Of 837 cases studied, the most common diagnosis was Seizure which was observed in 170 (20.3%) of cases. Followed by Pneumonia that was observed in 125 (14.9%) of cases. We also had significant number of sickle cell disease 86 (10.2%), snake bite 29 (3.5%) Scorpion sting 11(1.3%), Haemophilia 8 (1.0%) thalassemia 16 (1.9%) and Diabetes Mellitus Type 1 with DKA 16 (1.9%) cases.

Of 837 cases studied, 706 (84.4%) were discharged, 66 (7.9 %) were referred, 47(5.6%) expired and 18 (2.1%) went leave against medical advice (LAMA).

Majority of mortality occurred among children aged <1-year olds 18 (7.8%) followed by 1-5 years old 14 (5.8%) deaths. Male to female ratio was 0.8:1.0. Under 1 year mortality among admitted children was 7.7%. Under 5 mortalities among admitted children were 6.4%.

Table 3: distribution of outcome

Outcome	Number of Cases	Percentage
Discharge	706	84.4%
Referred	66	07.9%
Expired	47	05.6%
LAMA	18	02.1%
Total	837	100.0%

Table 4: Distribution of Systemic involvement

System Involved	Number of Cases	Percentage
Central Nervous System	196	23.4%
Respiratory	190	22.7%
Hematology	149	17.8%
Gastro Intestinal (GIT)	97	11.6%
Infectious Disease	73	08.7%
Animal Bite / Sting	45	05.4%
Cardio Vascular (CVS)	27	03.2%
Poisoning	27	03.2%
Endocrine	16	1.9%
Renal	15	1.8%
Storage Disorder	1	0.001%
Dermatology	1	0.001%
Total	837	100%

Table 5: Distribution of cases disease wise

Diagnosis	Number of Cases	Percentage
Seizure	170	20.3%
Pneumonia	125	14.9%
Sickle cell Disease	86	10.2%
Acute Diarrheal Disease	60	07.2%
Acute Gastritis	53	06.3%
Severe Anemia	37	05.4%
Snake Bite	29	03.5%
Poisoning	27	03.2%
Thalassemia	16	01.9%
Type 1 DM with DKA	16	01.9%
Malaria	15	01.8%
Congenital Heart disease	14	01.7%
Scorpion sting	11	01.3%
Hemophilia	8	01.0%

Table 6: Diagnosis wise distribution of mortality

Diagnosis	Number of Cases	Percentage out of total mortality
Status epilepticus	11	23.4%
Pneumonia	8	17.0%
Severe Anemia in CCF	5	10.6%
Meningoencephalitis	5	10.6%
Congenital Cyanotic Heart Disease	4	08.6%
Septicemia	4	08.6%
Snake Bite	3	06.4%
Sickle cell disease in crisis	3	06.4%
Nephrotic Syndrome	1	02.1%
Malignancy	1	02.1%
Scorpion Sting	1	02.1%
AGE Severe Dehydration	1	02.1%
TOTAL	47	100%

Discussion

In this present study, it was found that total of 837children in the age group of more than < 1 year to 14 years were admitted in the Paediatric Intensive care Unit of Late Lakhi Ram Agrawal Memorial Govt Medical College from Aug 2022 to Dec 2023. Of 837 cases studied, 231(27.6%) had age below 1 year, 268 (32.0%) had age between 2-5 years, 222(26.5%) had age between 6-10 years and 116(13.9%) had age above 10 years. Majority of patients 499 (59.6%) belonged to under 5-year age group. This is comparable to a study published by El Halal MG et al, from Brazil where it was reported that majority of patients (78.3%) was under 5 years of age [6]. In another study at paediatric intensive care unit (PICU) of Kurnool medical college and hospital, Andhra Pradesh it was found that majority 83.33% were under 5 year olds.[5]. Alao A study conducted by Abhulimhen-Iyoha BI et al, 5 revealed that 72.4% patients were aged less than 5 years.[7]

This study revealed out of 837 cases studied, 445(53.2%) were males and 392 (46.8%) was females. This makes male to female sex ratio in the entire study group was 1.2:1.0. this is comparable to study by Haque A et al and Bagri NK et al, who found that majority of patients were males [8, 9]. In another study Abhulimhen-Iyoha BI et al, also found more patients were males (59.8%) and found male: female ratio of 1.49:1.[7] Another study from Nepal by Shah GS et al, also found the male to female ratio to be 1.7:1.[10]

Of 837 patient's majority of the children 633 (75.6%) stayed for 2-7 days, 119 (14.2%) of children stayed ≤ 1 day. However, 222(10.2%) children needed >7 days stay in PICU. In another study by El Halal MG et al also found length of stay in PICU, the majority of the patients (52.9%) were admitted for up to 3 days.(6) In a study by Kapil D et al also found the duration of stay of the patients range from 6 hours to 46 days. 6.6% patients stayed longer than 7 days, out of which 2% stayed for longer than 13 days (long-stay patients).[11]

Of 837 cases studied, the most common system involved was central nervous system which was observed in 196(23.4%) cases. This is comparable to other study in southern India by Jyothi K A et al which found central nervous system was the commonest system involved (32.5%) [5]. This is followed by respiratory system 190 (22.7%) and Haematology 149 (17.8%). This was in contrast to a study published in British journal of medical research by Shah GS et al, which found that respiratory diseases contributed to the maximum number of cases i.e. 33% followed central nervous system diseases (18.6%) [10] Of 837 cases studied, the most common diagnosis was Seizure which was observed in 170 (20.3%) of cases. This is comparable to various other studies which states the same.(12) Followed by Pneumonia that was observed in 125 (14.9%) of cases. We also had significant number of sickle cell disease 86 (10.2%), snake bite 29 (3.5%) Scorpion sting 11(1.3%), Haemophilia 8 (1.0%) thalassemia 16 (1.9%) and Diabetes Mellitus Type 1 with DKA 16 (1.9%) cases.

Of 837 cases studied, 706 (84.4%) were discharged, 66 (7.9 %) were referred, 47 (5.6%) expired and 18 (2.1%) went leave against medical advice (LAMA). This is comparable to study done in Maharashtra by Bhavari VL et al also found 86.5% were discharged, 8.6% has DAMA (Discharge against medical advice) and 5.8% expired. [13] in another study Maheswari K et al. found the outcome noted was, (87.8%) were discharged, (10.7%) patients went against medical advice, (1.4%) patients were referred at parent's request [14].

In our center mortality was 5.6% which is comparable to other studies done in India [15,16] however, in some studies in some under developed countries mortality is very like a study done in Ethiopia by Edae g et al found mortality is as high as 21.1%. [17] and another study by Saleem M at Multan Pakistan found mortality rate in PICU was 18.0%. [18] Majority of mortality occurred among children aged <1-year olds 18 (7.8%) followed by 1-5 years old 14 (5.8%) deaths. This is comparable to a study by shah G S et al which also found that mortality is higher among < 1 year old followed by 2-5 years old. [10]

Conclusion

We conclude based on the present study that in our PICU, Mortality was low or as par with many other studies in comparison. With standardized treatment protocols, skilled expertise and proper training we have chance to provide quality care, decrease the mortality further and can get desirable outcome.

Ethical approval

The study was approved by the Institutional Ethics Committee

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