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Retrospective Analysis of Brought Dead Cases in Tertiary Care Hospital

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Abstract: The incidence of brought dead in children (BD) is high in tertiary care centers but there is limited number of studies in the current literature. The present study was undertaken to know patterns and other issues regarding the brought dead cases. It is a retrospective study done in tertiary care center, data of all brought dead cases from January 2014 to December 2016 was analysed. Most of the cases of BD were infants. Acute encephalitis syndrome (122/421) and septicemia (60/421) constitute most of the cases and 68.6% cases were from rural area. Acute encephalitis syndrome is the leading cause of brought dead. Accidental injuries also contribute significantly to it. There is need of well-designed studies regarding brought dead population in pediatric age group.
Keywords: Brought Dead, Infection, Need, Pediatrics.

INTRODUCTION

Literally, "brought dead" (BD) denotes those deaths happened before reaching at emergency. The incidence of brought dead is high in tertiary care centers but there is lack of proper audit and relevant data of these cases. Although there are many studies regarding mortality pattern of children [1, 2] but none of them takes brought dead into account. There are a few studies regarding the cause of brought dead [3-5] but they have included adult cases and mostly studied unnatural causes of death [3,6,7]. This work is a novel attempt to study the pattern and cause of BD in pediatric population.

MATERIAL & METHODS

It is a retrospective study of BD cases at the emergency room of tertiary care teaching hospital, over three years from January 2014 to December 2016. A patient was declared dead if there was neither pulse nor a response to stimulation and cardiopulmonary resuscitation was tried for a period of 20 minutes. Ethical clearance was obtained for the research project.

RESULT

A total of 421 cases were recruited for the study. Most of the cases were males (241/421). Majority of population belonged to rural area (289/421). Most common age group of presentation was Infancy followed by children of age group one to five years. Amongst the cause analysed most common cause was found to be acute encephalitis syndrome (122/421). The cause of BD could not be determined in 38.8% and 23.4% cases in 2015 and 2016 respectively. Nutritional analysis was done in 2015 & 2016; 9.4% and 8.1% deaths were due to complications of malnutrition. Others were septicemia (60/421), drowning (33/421), snake envenomation (21/421), scorpion envenomation (2/421) and electrocution (7/421), dog bite (2/421) and poisoning (21/421). During the process of resuscitation 6.2% children were found to be aspirated.

Table-1: Demographic distribution of Brought Dead Cases

	2104		2015		2016		Total
Sex	Male	Female	Male	Female	Male	Female	
	67	54	66	50	108	76	421
Residence	Rural	Urban	Rural	Urban	Rural	Urban	
	88	33	72	44	129	55	421

Table -2: Age wise distribution of Brought Dead cases

	2014	2015	2016	Total
1 – 6 Months	27	24	29	80 (19%)
6 – 12 Months	22	35	45	102 (24.2%)
1- 5 Years	26	34	68	128(30.4%)
5 – 10 Years	27	13	27	67 (15.9%)
10- 19 Years	19	10	15	44(10.4%)
Total	121	116	184	421

Table -3: Probable diagnosis of Brought Dead cases

	2014	2015	2016	Total
Septicemia	18	18	24	60 (14.2%)
Acute Encephalitis Syndrome	74	20	28	122(28.9%)
Drowning	15	4	14	33(7.8%)
Snake Bite	8	4	9	21(4.9%)
Scorpion sting	2			2(0.5%)
Dog bite	1	1		2(0.5%)
Electrocution	3	2	2	7(1.7%)
Other Poisoning		3	18	21(4.9%)
Aspiration		8	31	39(9.2%)
SAM		11	15	26(6.2%)
Unknown		45	43	88(20.9%)
Total				421

DISCUSSION

In tertiary care centers mostly sick cases are referred and most of them are in serious condition. On studying the general pattern of morbidity it was found that most of the death in children visiting hospitals occurred within first 24 hrs of admission [8, 9]. Males accounted for more than 50% cases (57.2%), (Table -I) it could be due biological fragile nature of males. Khursheed M *et al*. also found that Men accounted for two-thirds (64%) of BD patients, although they studied adult population [10]. In our study 43.23% children were aged less than 12 months. (Table -II) Whereas in 1990 The age distribution of the children who died shows that the highest proportion in the age group 1-2 yr. [11] The change in trend may be due to increase survival of newborns specially preterms. Most cases are in early age group and infectious etiology including AES and sepsis accounts for most of them [12]. The provisional diagnosis of AES and sepsis was made on the basis of history obtained. Mathers *et al*. [13] studied causes of death globally and regionally and in all age groups and found that infectious etiologies are the leading cause of death after ischemic heart disease and cerebrovascular accidents, which are common in adults. In our study AES constitute maximum number (28.9%) of brought dead, although it is a vague term including all etiologies of fever and altered sensorium, such as bacterial meningitis, tubercular meningitis, cerebral malaria, and acute disseminated encephalomyelitis [14].

Road traffic accidents (RTA) are common causes of BD in adults [3,4], however we did not find it responsible for any of the case, it could be because of either less number of cases of RTA in children or all such cases were referred directly to surgical emergency room. Drowning is one of the most common causes of accidental deaths in children throughout the world. The World Health Organization (WHO) reported the global burden of disease data that show that the global mortality rate from drowning is 6.8 per 100,000 person years.[15] Furthermore, over half of global mortality cases occur in children younger than 15 years. It is the second leading cause of accidental deaths among children aged 1–14 years in the United Sates.[16] In our work also it is the most common cause (33/86) of accidental death among BD children.(Table -III) There was an increased trend of drowning from 2.7 per 100, 000 in 1993 to 12 per 100,000 in 2004 in South Africa Males outnumbered females by 2.6:1. The highest number (96) of victims were under ten years of age and Deaths due to drowning has increased especially among male children and young adults.(17) Pediatric population accounts for nearly 28% of victims of scorpion envenomation[18]. Snakebites cause considerable morbidity and mortality in South East Asia.[19] In our work both these envenomation's together made 5.4% of BD cases. Scorpion sting was responsible for only two cases in year 2014, two deaths due to rabies in the year 2014 and 2015, whereas 21 victims of snake envenomation were found dead on arrival.

Electrocution is an uncommon cause of childhood death, [20] making only 1.7% of cases in present work. The electrocution cases represented 2.31% of all autopsy cases. All deaths were accidental

in nature and majority of the victims (79.25%) were males belonging to the age group of 11-30 years [21.

Aspiration and malnutrition are actually not the causes of death but these may be responsible or precipitating factors for it. Around 10% cases (39/421) had aspirated abdominal content. Malnutrition is a global problem in developing countries, particularly in children less than 5 years of age. It is estimated that nearly 20 million children have severe acute malnutrition [22]. These malnourished children often present with co-morbidities which lead to higher morbidity and mortality among under-five children in developing countries. In the absence of appropriate treatment, case-fatality rates in hospitalized children range from 30% to 50% [22,23]. In this work malnutrition per se accounted for only 6.2% of all BD cases which is quiet low, reason is non-inclusion of malnutrition criteria in 2014 and non assessment of nutritional status in other cases, where other probable cause was already assumed.

This study has several limitations. Firstly, the exact cause of death was not known and it was based on the short history and limited physical findings. Secondly, provisional diagnosis was not confirmed by post mortem examination. Thirdly it seems that functional diagnosis was made with prejudiced mind of prevalent disease in the area, it was more subjective and varied year to years. Also, given the design of the study, it was impossible to collect in-depth information regarding the cause of the death.

It is the novel and first of its kind study in pediatric population. We kept low threshold to find out the cause of death on which functional diagnosis was made. This work will provide usefull direction for future research about the need to investigate BD in pediatric population.

CONCLUSION

Majority of BD victims are Infants. Non road traffic accidental injuries account for significant cause of death in pediatric population and acute encephalitis syndrome is the leading cause of death on arrival. There is need of proper education and awareness regarding preventable causes of death and parents should be explained regarding early identification of danger sign at any point of contact with health care professionals. Further work is needed in this area in a prospective manner with standardized recruitment of BD cases based on the appropriate definition of death using standard questionnaire with proper documentation.

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