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AN AUDIT ON PATTERN OF MORTALITY IN A MEDICINE ICU AT TERTIARY CARE HOSPITAL OF NORTH-EAST INDIA

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Abstract

Background: Mortalities in medical Intensive Care Units (ICUs) are largely variable. Intensive care medicine has developed significantly over time. But still it is unpredictable in terms of pattern of mortality.

Materials and Methods: A total of 266 patients who died in the ICU of a tertiary care Hospital over the period of one year were studied retrospectively to review the mortality pattern.

Results: Out of 266 patients Male comprised 71.8% and female 28.2 %. Patients from rural area were 70.7% where as 29.3% belong to urban society. Among the study population preexisting diabetic and hypertensive patients were 10.5% and 16.5 % whereas 12.4 % were suffering from both. 56% of the study population was from more than 60 years age group. Sepsis (26.3%) was the leading cause of death followed by stroke (19.9%) and COPD (13.9%). Mean duration of hospital stay among study population was 7.61 days.

Conclusion: Sepsis, stroke, respiratory and cardiovascular diseases are the leading causes of mortality in our study. Prospective, larger, more studies regarding ICU mortality should be carried out for policy planning to improve the healthcare resources.

Keywords: mortality pattern, Intensive Care Unit, sepsis

Introduction

Intensive care medicine has developed by leaps and bounds in this modern era of medicine. Admission in ICU is always considered as a strong indicator of severe mortality[1].Its a well known fact that mortality percentage is generally higher in medical intensive care units of respective hospitals .Though it does not represent the trends of overall mortality among the community in a very significant way but atleast mortality statistics in ICU can give us some clues regarding health of the population. And accordingly policies can be made both in preventive as well as curative aspects. Factors like demography, infrastructure, management, ICU service are implicated in patients ' mortality[2] .Thus audit on pattern of mortality in any medical ICU gives an opportunity to improve the standards of careas well as help in better preparedness.

Materials and Methods:

This is a retrospective study conducted in the Dept. of General Medicine AGMC &GBP HOSPITAL, TRIPURA. Duration of one year 2019-20. Data collected from the ICU register of AGMC& GBP Hospital and statistical analyses done using the SPSS software.

Results:

Out of 266 patients in this one year 232 are Bengali (87.2%) and 34 from Indigenous population (12.8%) [table1]. Male comprised 71.8% and female 28.2 % [table 2]. Patients from rural area were 70.7% where as 29.3% belong to urban society[table 3] .Among the study population preexisting diabetic and hypertensive patients were 10.5% and 16.5 % whereas 12.4 % were suffering from both[table 4]

Table 1: Mortality pattern according to ethinicity of study population

ETHINICITY		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BENGALI	232	87.2	87.2	87.2
	INDIGENOUS	34	12.8	12.8	100.0
	Total	266	100.0	100.0	

56% of the study population were from more than 60 years age group[table 5].Highest mortality noted in the month of November and lowest being in the month of June[table 6]

Table 2: Mortality pattern according to gender of the study population

ETHINICITY	Frequency	Percentage	Valid Percentage	Cumulative Percentage
BENGALI	232	87.2	87.2	87.2
INDIGENOUS	34	12.8	12.8	100
Total	266	100	100	

Table 3: Mortality pattern according to uran or rural residence of study population

RESIDENCE	Frequency	Percentage	Valid Percentage	Cumulative Percentage
RURAL	188	70.7	70.7	70.7
URBAN	78	29.3	29.3	100
Total	266	100	100	

Table 4: Co morbidities associated in study population

CO MORBIDITIES	Frequency	Percentage	Valid Percentage	Cumulative Percentage
DIABETES MELLITUS	28	10.5	10.5	10.5
HYPERTENSION	44	16.5	16.5	27.1
BOTH	33	12.4	12.4	39.5
NIL	161	60.5	60.5	100
Total	266	100	100	

Table 5: Age classification in study population

Age range (in years)	Frequency	Percentage	Valid Percentage	Cumulative Percentage
12-20	6	2.3	2.3	2.3
20-40	24	9	9	11.3
40-60	87	32.7	32.7	44
>60	149	56	56	100
Total	266	100	100	

Among the wide spectrum of diseases causing death sepsis (26.3%) was the leading cause followed by stroke (19.9%) and COPD (13.9%)[table.7-8] . Mean duration of hospital stay among study population was 7.61 days [table .9]

Table 6: Month wise death report in study population

Month	Frequency	Percentage	Valid Percentage	Cumulative Percentage
JANUARY	22	8.3	8.3	8.3
FEBRUARY	26	9.8	9.8	45.5
MARCH	20	7.5	7.5	53
APRIL	20	7.5	7.5	60.5
MAY	21	7.9	7.9	68.4
JUNE	16	6	6	74.4
JULY	23	8.6	8.6	83.1
AUGUST	24	9	9	92.1
SEPTEMBER	21	7.9	7.9	100
OCTOBER	23	8.6	8.6	16.9
NOVEMBER	27	10.2	10.2	27.1
DECEMBER	23	8.6	8.6	35.7
Total	266	100	100	

Table 7: Cause of death of patients admitted in MICU AGMC and GBPH during year 2019

CAUSE OF DEATH	Frequency	Percentage	Valid Percentage	Cumulative Percentage
AIHA	1	0.4	0.4	0.4
ASTHMA	1	0.4	0.4	0.8
CANCER	6	2.3	2.3	3
CCF	13	4.9	4.9	7.9
CLD	17	6.4	6.4	14.3
CONVULSION	1	0.4	0.4	14.7
COPD	37	13.9	13.9	28.6
DENGUE	1	0.4	0.4	28.9
DKA	7	2.6	2.6	31.6
HIV	2	0.8	0.8	32.3
IHD	4	1.5	1.5	33.8
ME	3	1.1	1.1	35
MENINGITIS	7	2.6	2.6	37.6
MI	12	4.5	4.5	42.1
NEPHOTIC SYNDROME	1	0.4	0.4	42.5
PNEUMONIA	6	2.3	2.3	44.7
RF	19	7.1	7.1	51.9
SCRUB TYPHUS	1	0.4	0.4	52.3
SEPSIS	70	26.3	26.3	78.6
STROKE	53	19.9	19.9	98.5
TB	3	1.1	1.1	99.6
UGIB	1	0.4	0.4	100
Total	266	100	100	

(AIHA-autoimmune hemolytic anemia,CCF-congestive cardiac failure,CLD-Chronic liver disease,ME-metabolic encephalopathy,MI-myocardial infarction,RF-renal failure,UGIB-upper GI bleeding)

Table 8: Cause of death according to system wise classification

System	Frequency	Percentage	Valid Percentage	Cumulative Percentage
CNS	54	20.3	20.3	20.3
CVS	29	10.9	10.9	31.2
GIT	18	6.8	6.8	38
INF	81	30.5	30.5	68.4
MAL	6	2.3	2.3	70.7
META	11	4.1	4.1	74.8
NIF	7	2.6	2.6	77.4
RENAL	20	7.5	7.5	85.3
RESPIRATORY	39	14.7	14.7	100
OTHERS	1	0.4	0.4	77.8
Total	266	100	100	

(INF-infection, NIF-neuroinfections, META-metabolic, MAL-malignancy)

Discussion:

Medical ICU s is different in terms of patient selection in comparison to the coronary care unit and surgical ICUs. So the mortality pattern is not that much predictable. But it is a established fact that ICU mortality rate is quite high globally. Different factors for ICU mortality which are usually reported sometimes found to be contradictory partly because of differences in statistical analyses [3]. Mortality is higher among more than 60 years age group and in males which is comparable with

other similar studies[4,5].Sepsis was the main cause of death in our study though other few studies had shown Ischaemic heart disease as the prime cause[6,7].In our study respiratory and cardiovascular causes for mortalty are 14.7% and 10.9% respectively. In a similar previous study

Dongre A et al (2016) and Paudel et al(2011) found 19.06%-17.51% &22.86%-22.86% respectively[8,9].In our study population maximum were from rural area(70.7%). This may be implicated to the fact that sepsis was the prime cause of mortality here. There may be sub optimal medical care in rural areas which might have delayed the specialized care.

In a study it was observed that Cardiac arrest patients present a biphasic mode of death: early deaths are related to an initial state of persisting shock, whereas neurologic injuries are responsible for late deaths [10]. Also it has been observed that early deaths in septic are due to intractable multiorgan failure [11]. Age and comorbid condition ca determine death occurring after 90 days of ICU admission, aslo unexpected and anticipated death can occur at different times, days 1 and 5.

Retrospective study has got many limitations. It may account to bias regarding selection and recall. More over classification criteria sometimes changes with advances in medical science. Larger sample size are recommended but it is association not the etiology which can be detected with such type of study [1213,14]. So to make a better policy regarding treatment and preventive aspect a larger population prospective study is needed in this crucial issue. Ferrand *et al*.in a study observed that half of the deaths occurring in the ICU followed withdrawal of or withholding treatments [15].

Conclusion:

The main causes of mortality in medical ICU in this study were sepsis , CNS(stroke) , respiratory and cardiovascular diseases etc. So due emphasis to be given up on the respective causes in this particular set up also keeping an eye on global trends. ICU mortality analysis is instrumental in policy planning for improvement in healthcare resources.

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