Original Research Paper

Forensic Medicine

LENGTH OF HOSPITAL STAY IN COVID-19: FROM DIAGNOSIS TO DEATH.

Dr. Shiekh Amir	Senior Resident, Department of Forensic Medicine, Faculty of Medicine, Government Medical College, Srinagar.
Dr. Sadaf Ali*	Senior Resident, Department of Biochemistry, Faculty of Medicine, Government Medical College, Srinagar. *Corresponding Author

ABSTRACT Distribution of medical facilities and triage is essential for structuring a strong public health system in response to COVID-19. Length of hospital stay of confirmed COVID-19 patients from day of admission to death may be highly informative in view of decision making during these crucial times of world-wide pandemic. **Methods:** Data from suspected and confirmed death cases of COVID-19 patients was studied and compiled. Information was collected on demographic features like age and gender. Initial diagnosis, date of admission, date of death and duration of hospital stay was compiled fully. **Results:** According to this study total number of hospital deaths in SMHS hospital from a period of May to July 2020 was 309 patients. Out of total number of hospital deaths 96 patients were found to be COVID-19 positive after confirmation of nasopharyngeal swab sample by rt-PCR. It was observed that the period of hospital stay was very short in patients who died due to COVID-19. This adds on to the knowledge that time from initial diagnosis to death is very less in most of the COVID-19 deaths. **Conclusion:** Preparation control measures should involve focus on pattern of death and time from initial diagnosis to death of patients especially in places with lack of basic medical facilities. This may aid in structuring the treatment protocol for COVID-19 and considering these patients as medical emergencies.

KEYWORDS : COVID-19, medical facilities, triage, death.

Introduction:

The Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV- 2), also known as novel Corona virus disease is a newly emerging zoonosis that appeared December 2019 in China and led to the Corona virus Disease 2019 (COVID-19).[1] This pathogen results in a syndrome principally causing difficulties in respiration and pneumonias of unidentified cause. Some cases develop to a critical care respiratory condition that requires artificial respiration and ventilators in intensive care unit settings.[2-7] COVID-19 has caused the pneumonia pandemic in the world.[8-10] As of March 5, 2020, a total of 96539* cases with laboratory-confirmed COVID-19 infection have been detected in the world reported by the World Health Organization (WHO). Human-to-human transmission is characterized by an alarming exponential rate, which has led to steep curves and intense rise of COVID-19 cases in many countries globally.[11] On 3rd of April India had 2547 cases of SARS-COV infections with most cases in states of Tamil Nadu, Kerala, Maharashtra and Delhi. Presently as per 10 August reports, the number of cases has increased to 2214078* in India as per COVID India.org and deaths of 44771*. In Kashmir this pandemic started by the end of March 2020 when the first case was an elderly lady who had history of foreign travel. Subsequently the number of cases increased despite lock down. Most of these cases had history of foreign travel. Later on the diseased cases increased in numbers till now and are still rising in numbers showing an increasing trend. Confirmed cases of COVID-19 in UT of J and K is 24897* and deaths is 472* as on 10 August morning. According to the various clinical studies COVID-19 presents with the most common symptoms of fever, dry cough, shortness of breath, sometimes sputum production, generalized fatigue, headache, sore throat and gastrointestinal symptoms like diarrhoea.[12-13]

In Kashmir region no significant downward dip has been found so far, while as the cases are still increasing at an alarming rate. It has been seen now that irrespective of travel history people are getting COVID-19 and the main reason is the number of COVID-19 contacts that created a disturbing situation in the valley. This may be attributed to social transmission as India has entered phase 3. Various patterns and manifestations of corona virus disease have been seen. From mild to moderate symptoms it has led to grave situations

and death of patients. It has also been seen that although corona virus leads to respiratory failure but at the same time various co-morbid illnesses make such patients to develop aggravating illnesses. Old patients have died due to age and other associated illnesses, however corona has not spared young and previously healthy individuals. Usually time from diagnosis to death is less in COVID-19 patients; although many people have recovered well from the disease. Different studies show different mortality rates. We conducted this study to identify the length of stay in COVID-19 patients from the day of admission to death. We aim to inform the critical period of intervention to reduce mortality in COVID-19 patients and inform healthcare system to make protocols and policy to anticipate better COVID-19 pandemic.

Materials and methods:

A study was done in the department of Forensic Medicine and Toxicology, GMC, Srinagar. Data of total number of admitted patients who expired from a period of May 2020 to July 2020 during the hospital stay and who were suspected of COVID-19 was compiled. Out of 309 number of hospital deaths 96 deaths were attributed to COVID-19. Among the said number of COVID-19 positive cases some were tested posthumously. This was done so as to follow a protocol for burial of COVID-19 dead bodies and a separate protocol for the COVID-19 negative dead bodies. COVID-19 positive status was assigned to a body only after obtaining testing analysis results of nasopharyngeal swab confirmed by rt-PCR technique. Various co-morbid conditions were also recorded. In every case the time from initial diagnosis to death was noted. In addition we compiled the demographic parameters like gender differences and age. Duration of length of hospital stay in days was compiled.

Records of deaths identified through available data from the Department.
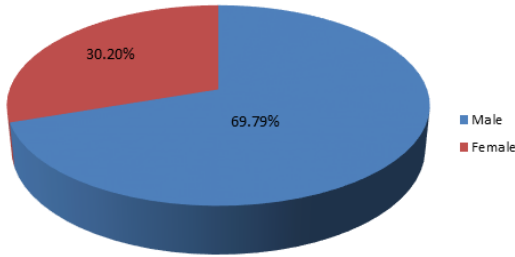N= 309

Non-COVID deaths excluded.
N=213

COVID-19 Positive deaths
N= 96

Results:
Out of 309 number of hospital deaths 96 was the number of patients who died due to COVID-19 disease.

**Graph1: Gender wise percentage of deaths in COVID-19 positive patients.**

It was seen that number of deaths was more in male patients than females. The percentage of affected males was 69.79% and females were 30.20% of total COVID-19 deaths as shown in Graph 1.

Graph 2: Distribution of age in years as seen in COVID-19 patients (Month wise).
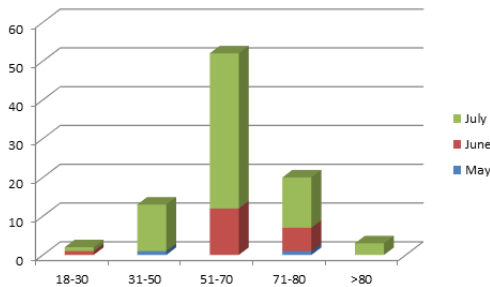

Age of the patients was a strong contributing factor. Maximum patients who expired were in the age group of 51-70 years of age. Patient's age ranged from a wide spectrum of as young as 18 years upto oldest patients of 85 years of age.

Graph 3: Month wise deaths (COVID-19 and others)
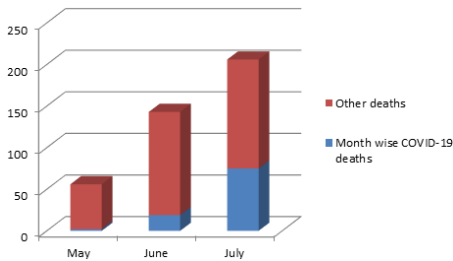
The rise of COVID-19 deaths showed an increasing trend. The number of deaths in month of May was 3.7 %, June 15.23% with maximum upto 57.25% in July of total hospital deaths.

Graph 4: Duration from date of admission to death of COVID-19 patients in days during hospital stay.
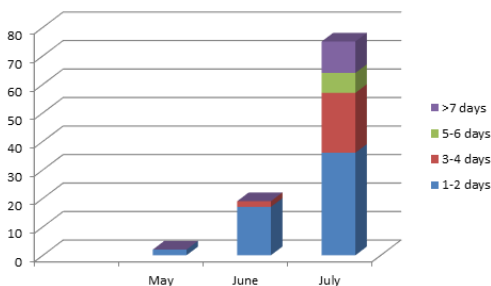
It was noticeable that the duration of hospital stay in most of the cases was less than a week.

37.5% of COVID-19 deaths 1-2 days of hospital stay, 21.8% deaths occurred in 3-4 day and 11.4% patients died more than a week's time. Patients who died mostly had respiratory failure due to bilateral CAP; multi organ failure, cardiopulmonary arrest with associated co-morbidity and elderly age group. However, some atypical cases of young and otherwise normal individuals who died due to COVID-19 can't be excluded.

Discussion:
Due to the rapid rise of COVID-19 pandemic globally, determination of the resultant requirements in view of healthcare resources has become the main necessity. Facilities such as beds, oxygen cylinders and ports, equipments, ventilators are the main concern for many developing countries especially those lacking the basic medical facilities. [14] In order to plan the future demand estimation of length of hospital stay in diagnosed COVID-19 patients may prove to be helpful for health benefits. Assessment of the levels of health care and formulation of SOPs in view of COVID-19 requires keen observation of these patients, their presentation and categorisation. Mortality data of COVID-19 death will help us to track the characteristics of COVID-19 cases, improve treatment protocol and formulate strategy to reduce COVID-19 deaths simultaneously. In our study 37.5% of COVID-19 deaths in SMHS Hospital took place in the first two days of hospital stay; 21.8% deaths occurred in three to fourth day of hospital admission. However, 11.4% patients died more than a week's time. Patients who died mostly had associated co-morbid conditions like COPD, Asthma, Cardiovascular disease, Diabetes, Hypertension and others. The highest number of deaths was found in month of July and most of them were in the age group of 51-70 years. COVID-19 presents with different severity levels.

Hospital care may differ from general ward based care to highly dependable settings like intensive care units with oxygen support where patients may be intubated for artificial ventilation and support [15, 16]. The study results reveal that we must focus on associated co-morbidities as well in addition to treatment of COVID-19. Our study may be helpful to identify factors and to characterize those COVID-19 patients, who are at higher risk, and thus set aside a more targeted and definite approach to avoid deaths. It is thus important to keep targeted protocol for COVID-19 patients and manage it as emergency situation and improve our basic health care system and policy. Emphasize on the medical facilities and assembled medicines, oxygen facilities and management of co-morbidities simultaneously. Categorisation of patients and triage may play a pivotal role.

Conclusion:
Basic preparation towards COVID-19 management and to develop control measures should involve focus on pattern of death and time from initial diagnosis to death of patient. This is especially important in places with lack of basic medical facilities. Planning for proper management and treatment is important for an organised structured health policy. In crucial times of pandemic, the treatment protocol and at the same time focussing on the time span will be beneficial for facilitating maximum health care and benefit towards these patients.

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