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BIBLIOGRAPHIC EVIDENCE OF THE EFFECT OF COMORBID DISEASES ON OUTCOME OF COVID 19 INFECTION EXCLUSIVELY IN THE INDIAN POPULATION.

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KEYWORDS :

World wide patients suffering with comorbid illnesses were reported to suffer with moderate to severe covid 19 manifestations with a direct correlation to increased morbidity, utilization of critical care resources and mortality despite best efforts to treat.[1] Our aim in this review is to collect the effect of comorbidities on covid 19 susceptibility and outcomes in our own country i.e., indian patients . This shall be very helpful information as the present treatment algorithms lack the management for these diseases along with covid despite a perceived higher susceptibility to critical infection and mortality in presence of comorbid diseases. In our review, among 4290 patients, 2947 patients had one or more than one comorbid illness.

N Gupta et al studied 200 patients with covid 19 infection.[2] 83 patients had comorbid illnesses with 46 being hypertensives and 32 were diabetics. 11 patients with recently diagnosed pulmonary tuberculosis, 9 with coronary artery disease , 6 with hypothyroidism , 5 with stroke and active malignancy respectively were among those who got infected. Chronic kidney disease was noted in 4 patients and one each were known cases of bronchial asthma, Chronic obstructive lung disease and psychiatric illness. The authors have mentioned statistically significant numbers of diabetics in critically ill patients (P = 0.01). Non ICU patients showed more hypertension , CAD and malignancy as pre existing diseases(P< 0.5). There were 19 deaths in their patient cohort with 18 patients being diabetics (p= 0.003 for severe infection and 0.01 for mortality) . This study was done during the very initial times of the first wave and the results improved our understanding of the effect of diabetes on covid 19 infected indian patients.

C A Kayina et al studied 235 patients with RTPCR proven covid 19 infection.[3] The frequencies of comorbid illnesses in decreasing order were Hypertension (65) , DM (54), malignancies (26) , CKD (22) and Chronic liver diseases (10) . All CKD were in advanced stages of failure (KDIGO 3-5) . Stable CAD was reported in 13 patients . 5 patients were suffering from COPD. 20 deaths were reported with 3 patients each suffering with DM, Hypertension and CKD. Two patients with malignancies and two with CLD were also among nonsurvivors. This study had shown a favourable prognosis unrelated to the comorbidities.

S L Soni et al had studied a cohort of 114 patients with covid 19 infection comprising 34 patients who had associated comorbid illnesses of varying severity.[4] 10 patients had multiple comorbidities. Hypertension and DM was seen in 19 and 17 patients respectively. Hypothyroidism and CKD were the next common diseases. CAD, COPD, CLD,Stroke and obesity had minimal (1-2) patients representation. The authors had categorized Hypertension and DM among severity of covid 19 infected patients. According to them, only 8 /19 hypertensives and 7/17 diabetics developed severe covid disease. They mentioned in their mortality statistics that among the 3 patients who were the non survivors, all were diabetics and two patients had End stage renal disease (dialysis dependent). They concluded that they were able to identify critical illness at admission with history of DM and Hypertension (P<0.001).

S Suresh et al studied 116 patients with 58.6% (68) having at least one comorbid disease. [5].

Hypertension was the most common illness. The authors had categorised the cause effect relationship of various comorbid illnesses into mild, severe and critical diseases. Hypertension was responsible for 14 patients with critical illness and an almost similar number for severe illness. DM was equally distributed among the patients in all three categories. Patients with CKD had severe illness however less number was shown to have critical illness. The diseases which proved out to be statistically highly significant for critical covid infection were CLD(P=0.07), Stroke (P= 0.004) and COPD (P=0.04). The authors concluded that absence of comorbidities was found to have a significant negative association with the need for mechanical ventilation or mortality. However, an increasing number of comorbidities were statistically very significant for admission to ICU (P=0.041).

P Mohandas et al had studied the epidemiological characteristics of the largest group of 3345 covid positive patients . [6]The most frequently reported comorbidities were DM in 37.1%, hypertension in 29.1%, CAD in 6%, Hypothyroidism in 2.8%, CKD in 1.6% and COPD in 0.20% of patients. The proportion of deaths were also statistically very significant in patients with DM, hypertension and CKD (P<0.001), CAD(P=0.001) and COPD(P=0.03).The authors also discussed that presence of comorbidities delayed the recovery from covid infection. The study had a higher mortality rate of 29.71% which was noticed in 229/ 994 patients with comorbidities.

Mohan A et al studied 144 patients and reported comorbidities in 23 patients .[7] 16 of them were diabetics , three each were hypertensives and hypothyroid respectively. CAD, Bronchial asthma , Parkinsonism and chronic respiratory diseases were seen in one to two cases at the maximum. The total number of deaths were 2 who were suffering from >2 comorbidities.

Aggarwal A et al studied 82 patients with symptoms of Subacute respiratory illness out of which 32 patients were confirmed for covid 19 infection by RT PCR. [8]The authors had compared the incidence of comorbid illness to primary composite outcome in the form of mechanical ventilation, ICU admission or death. Thirteen patients had two pre existing diseases. DM(50%), hypertension (34.4%) and COPD (15.6%) were the most common comorbid illnesses. The death rate was higher in diabetics (P=0.003) and hypertensives (P= 0.03) as compared to other comorbidities. Though diseases like Bronchial asthma,CVA,hypothyroidism ,and tuberculosis were very uncommon, 90-100% of these patients developed a severe disease with 50% mortality rate. This study group included a significant number of patients with chronic pulmonary diseases.

Z Siddiqui et al compared a group of 52 survivors and 52 non survivors of covid infection to assess the impact of comorbid illnesses on the outcome. [9]37/104 had one and 29 patients had two comorbidities present. The most common illness was DM seen in 64 patients with 59.4% mortality (P=0.01). Hypertension was present in 49 patients with 37 deaths (P=0.0001). The diseases like CKD had 22/29 deaths(P=0.01), CAD had 18/25(P=0.01). Mortality was clinically observed to be higher in chronic lung diseases and CLD patients. Diseases like Stroke, malignancy and hypothyroidism were seen in 2-5 patients only but had a 100% mortality index. This study has highlighted the need for a close vigilance of comorbid illnesses .

All these studies have DM as a common parameter to indicate a non favourable outcome in covid patients. Pulmonary diseases were not significantly proven to be a poor prognostic factor. This association needs to be further studied and reported. Diseases like CAD, CKD and hypothyroidism need careful observation and management. As for hypertension, the reports are not conclusive and in our personal opinion the uncontrolled hypertensives with organ related complications are more prone for critical illness. The VACO score for early assessment of morbidity and mortality in elderly population infected with covid 19 virus will be very informative in our population.[10]

The evidence from our own patients who have suffered with covid infection in the first and second waves should help us to plan for treatment algorithms specifically including the management of comorbid illnesses. The limitation of this review is the ambiguity of the information about those patients who have these illnesses and yet did not get infected with covid 19 virus. Complete information as to staging of comorbid disease is also not available.

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