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MANAGEMENT OF PATIENTS UNDERGOING CHRONIC HEMODIALYSIS DURING THE COVID-19 PANDEMIC: FONDAZIONE POLICLINICO A. GEMELLI'S EXPERIENCE

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BACKGROUND AND AIM: COVID-19 (CoronaVirus Disease 19) is an acute respiratory disease caused by SARS CoV 2 virus. The correlation between SARS-CoV2 infection and comorbidities is complex; patients with multiple comorbidities present often with the most severe symptoms that could potentially lead to death. Patients undergoing hemodialysis are generally frail and immunodeficient. This leads to a greater risk of contracting infectious diseases. In the literature, the estimated incidence of SARS-CoV2 infection is 3.24% in chronic hemodialysis patients.

METHOD: Fondazione Policlinico A. Gemelli is a COVID hospital. During the pandemic patients from several dialysis centers converged in our hospital. FPG has two dialysis centers, one for outpatients and one for inpatients. Patients admitted for COVID-19 infection have been treated in three different settings: 1. isolation room within the dialysis center; 2. Bedside; 3. In a COVID-19 dialysis center. We retrospectively collected data of patients treated from March 2020 to January 2021 and analyzed the SARS-CoV2 incidence in our center's chronic hemodialysis patients.

RESULTS: 66 hemodialysis patients affected by COVID-19 have been treated in our hospital from March 2020 to January 2021, 60 patients undergoing chronic dialysis and 6 patients diagnosed with acute kidney injury (AKI) stage III non-intensive care unit. Among chronic patients, 64 underwent chronic hemodialysis and 2 patients underwent peritoneal dialysis. Median age was 68.19 (46 males, 20 females), all patients had multiple comorbidities: 37.8% of patients had diabetes mellitus; 72.7% cardiovascular diseases and 16.6% a positive clinical history for cancer. Among the 6 AKI cases, 3 patients regained total kidney function; the other 3 had to continue renal replacement therapy. The mean hospital stay length was 18.5 days with a mean time of COVID-19 infection of 21.23 days. The overall mean Charlson Comorbidity Index was 6.21. Among the 66 treated patients, 43 were diagnosed with COVID-19-related pneumonia, 14 had the infection, no pulmonary involvement, but presented with other complications, and 5 patients resulted positive although asymptomatic. Among the 116 hemodialysis outpatients, only 4 presented with SARS-CoV2 infection, 3 were contacts of a positive family member and 1 resulted positive during a hospital stay for Clostridium Difficile infection. All patients required hospitalization. 14 (21%) patients died. Among the deceased patients, the mean age was 76.90 years (9 males, 3 females), mean Charlson Comorbidity Index was 7.3, mean hospital stay length was 9 days. Among patients who survived the disease the mean age was 76.92 years (34 males, 14 females), mean Charlson Comorbidity Index was 5.87 and mean hospital stay length was 19.47 days. Statistical significance was reached for age (p value 0.005) and Charlson Comorbidity Index (p value 0.39), but not for mean hospital stay length (p value 0.13). All COVID-19 patients were treated with bicarbonate hemodialysis and a TheraNova 400 Baxter® filter. This filter was chosen for its efficiency on medium-size molecules removal (between 25 kDa and 60 kDa) that may be associated with inflammation. Bedside treatments were performed using the Genius© Fresenius system. Each treatment lasted 180 minutes, in order to reduce the time of exposure to COVID-19 of medical staff and the risk of virus spread on one hand, but still ensuring an optimal and complication-free treatment to patients.

CONCLUSION: Our experience seems to confirm the national data collected so far, both in terms of patients' outcomes and mortality rate. Our study confirms that age is a risk factor for mortality. How to properly manage chronic hemodialysis patients affected by COVID-19 remains a challenging and burdensome question. However, there is the need of new flexible solutions that guarantee the patients and the medical staff's safety on one hand and a personalized management on the other.