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Evaluation of vancomycin based on risk factors in emergent and critically ill patients

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REMDESIVIR USE IN PATIENTS WITH RENAL IMPAIRMENT

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PURPOSE: Conclusive data on safety of remdesivir in renal impaired as well as the incidence of liver injury are lacking. The primary objective of this study is to assess the incidence of acute kidney injury (AKI) and to trend the liver function tests (LFTs) during remdesivir treatment and change in eGFR from baseline to end of remdesivir treatment as well as 48 hours after completion of therapy.

METHODS: This is a retrospective chart review study including adult Covid19 patients receiving remdesivir with a baseline eGFR< 30 ml/min per 1.73 m^2 from December 2020 to May 2021. The primary outcome of the study is the incidence of AKI and hepatic injury. The secondary outcome is to assess the efficacy of remdesivir defined by oxygen requirement during therapy.

RESULTS: Seventy-one patients were included in the study. Average eGFR improved by 30.3% at the immediate end of remdesivir treatment and by 30.6% at 48 hours after the end of the treatment (both P< 0.0001). Comparing to baseline, creatinine at the end of remdesivir treatment decreased by 20.9% (P< 0.0001), creatinine of 48 hour after remdesivir treatment decreased by 20.5% (P< 0.0001). Creatinine clearance increased by 26.6% (P< 0.0001) at end of treatment and increased by 26.2% (P< 0.0001) by 48 hours after end of treatment. AST average increased by 2.5% at the end of remdesivir treatment (P=0.727). At 48 hours after remdesivir completion, average AST dropped by 15.8% (P=0.021). ALT average increased by 25% (P=0.004) at the end of remdesivir treatment and increased by 12.0% (P=0.137) at 48 hours after remdesivir completion. Both direct and total bilirubin at end of remdesivir treatment as well as 48 hours later remained stable and did not have significant changes from baseline (P >0.05). Overall, 38% (27 out of 71 patients) experienced oxygenation improvement shown by down-titration of oxygen therapy. Fifty-seven percent of patients received other nephrotoxic medications. The mortality rate is 33.8%. Fifteen of the 71 patients were admitted into ICU. Sixty-five percent (46/71) patients were discharged alive from hospital.

CONCLUSIONS: This study showed that remdesivir use in renally impaired Covid 19 patients with eGFR< 30 ml/min is safe and effective. However, large and prospective studies are needed to validate our findings.

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EVALUATION OF VANCOMYCIN BASED ON RISK FACTORS IN EMERGENT AND CRITICALLY ILL PATIENTS

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INTRODUCTION: Methicillin-resistant *Staphylococcus aureus* (MRSA) infections are associated with prolonged hospital length of stay and mortality rates up to 20%. Risk factors for MRSA and presumed type of infection often guide vancomycin prescribing. This study evaluated the presence of MRSA risk factors in emergent and critically ill patients who received vancomycin therapy.

METHODS: This retrospective study evaluated emergent and critically ill patients who received vancomycin for at least 24 hours for a presumed infection from 1/2020–3/2020. Patients were excluded if vancomycin was administered for surgical prophylaxis. Patients were divided into groups: MRSA Risk (MRSA-R) vs MRSA No Risk (MRSA-NR). MRSA risk factors were defined and collected. Culture data were evaluated 48 hours before and 72 hours after initiation of vancomycin. SPSS v21.0 was used for analysis.

RESULTS: Of the 1053 emergent and critically ill patients identified 469 patients were included for analysis (MRSA-R n=208 vs MRSA-NR n=261). Patients were predominantly male (58%) with a mean age of 63.8 ±15.9 years. Baseline vitals were similar between groups. Only 7% of patients had SBP < 90 mmHg and incidence was similar between groups (p=0.58). Overall, 56% of patients received vancomycin without any MRSA risk factors. MRSA was identified on culture in 40 patients (10% MRSA-R v 7% MRSA-NR, p=0.27), and MRSA nares screening was positive in 3 patients (0.6%). Of the 208 patients with MRSA-R, the most common risk factor identified was antibiotic use within 90 days (52%). Of the MRSA-R group, 69% had at least 1 risk factor and 31% had > 2 risks. Vancomycin was more prescribed in MRSA-R patients in the emergency department (47% MRSA-R v 25% MRSA-NR, p< 0.001) compared to MRSA-NR patients in the ICU (19% MRSA-NR vs 6% MRSA-R, p< 0.001). MRSA-NR patients tended to receive more vancomycin doses (5.4±4.1 MRSA-NR v 4.7±4.0 MRSA-R, p=0.08). There were no differences in length of stay (p=0.71) or in-hospital mortality between groups.

CONCLUSIONS: MRSA infections are associated with negative sequelae. In this study, vancomycin was empirically prescribed in over half of patients without MRSA risk factors and MRSA was minimally identified on culture. In supporting antimicrobial stewardship, additional efforts are needed to optimize empiric use of vancomycin.