Nosocomial vs Healthcare Associated vs Community Acquired SBP – A Systematic Review and Meta-Analysis

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Introduction: Spontaneous bacterial peritonitis (SBP) is a common complication in decompensated liver cirrhosis. SBP is defined as ascitic fluid polymorphonuclear cell count > 250/mm3. Community acquired SBP (CA-SBP) occurs within 48 hours of admission to the hospital. Healthcare associated SBP (HA-SBP) is defined as SBP occurring in patients who were hospitalized in the preceding 90 days to months. Nosocomial SBP (N-NBP) occurs more than 48- 72 hours after hospital admission.

Methods: We conducted a systematic review and meta-analysis on the studies that compared N-SBP, HA-SBP and CA-SBP. We performed a comprehensive database search in PubMed, Embase and Web of Science from inception through May 18, 2022. Randomized controlled trials, prospective and retrospective cohort studies and case series were included. Number of N-SBP, HA-SBP and CA-SBP episodes, ascitic fluid culture results and previous SBP episode data was gathered. The primary outcome was mortality rate in all types of SBP. The secondary outcome was resistance to third generation cephalosporins. The random effects model was used to calculate the risk ratios (RR), mean differences (MD) and confidence intervals (CI). A p value <0.05 was considered statistically significant. Heterogeneity was assessed using the Higgins I2 index.

Results: Fourteen retrospective and prospective cohort studies comprising a total of 2302 SBP episodes were included. The mortality rate was statistically significantly higher in N-SBP compared to HA-SBP (RR 1.84, p<0.0001, CI 1.43- 2.37, I2=0%) and CA-SBP (RR 1.69, p<0.00001, CI 1.4-1.98, I2= 33%), but not statistically significant between HA-SBP and CA-SBP (RR=1.40, p=0.34, CI=0.71-2.76, I2=53%). Resistance to third generation cephalosporins was statistically significantly higher in N-SBP

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compared to HA-SBP (RR=2.02, p=0.003, CI 1.26-3.22, I2=54%), CA-SBP (RR=3.96, p<0.00001, CI=2.50-3.60, I2=52%) and between HA-SBP and CA-SBP (RR=2.25,p=0.002, CI=1.33-3.81, I2=0%).

Conclusion: A lower threshold to start broad spectrum antibiotics with targeted therapy guided through culture data should be undertaken for appropriate treatment of SBP and to improve mortality in N-SBP and HA-SBP.

