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Webinar

A retrospective observational study on determinants and outcomes of hospital acquired infections in Covid-19 patients, at a tertiary care hospital in India

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Background:

Healthcare associated infections (HAI) are the most common adverse events in hospital industry and a major health problem with an impact on morbidity, mortality and quality of life. Patients infected with COVID-19 are at more risk of getting hospital acquired infections due to prolonged stay in hospital, use of steroids and immunosuppressant medications.

Objective:

To identify the types, determinants and outcome of HAIs amongst COVID-19 patients.

Material and Methods:

This was a prospective observational study conducted at 220 bed tertiary care hospital. For management of COVID -19 patients separate negative pressured 45 beds were allocated including 9 ICU beds. The data was collected during the ongoing surveillance conducted to identify Healthcare Associated infections (HCAIs) using the National Healthcare Safety Network (NHSN) surveillance guidelines. A case report form of International Nosocomial Infection Control Consortium (INICC) was used to collect the data for routine surveillance. The information thus gathered was analyzed by the infection control team to identify the types of HAIs and risk factors. The HCAIs were further analyzed to identify preventable and non-preventable factors causing these HAIs.

Results:

From April 2020 till December 2020 amongst 1871 admitted COVID -19 patients 38 HAIs were identified. Overall mortality in COVID 19 patients was 4.2% (79/1871) and in COVID -19 ICU was 18.8% (72/382). Out of 79 deaths in these patients 49.36% (49/79) death was due to HAIs. Out of 49 deaths due to HAIs in COVID -19 patients 71.42% (35/49) were from the COVID -19 ICU Was 18.8% (72/382). Out of 79 deaths in these patients 49.36% (49/79) death was due to HAIs. Out of 49 deaths due to HAIs in COVID -19 patients 71.42% (35/49) were from the COVID -19 ICU. Amongst 38 HAIs in COVID-19 patients, 5 were device associated infections (DAIs) and 33 HAIs were non device associated (Non DAIs). DAIs included 3 Central Line Associated Blood Stream Infections (CLABSIs), 2

Catheter Associated Urinary Tract Infections (CAUTIs) and 1 Possible Ventilator Associated Pneumonia (PVAP) with Secondary BSI. The most common non-DAIs include 25 cases of PNEU 2 (NHSN classification) with 19 patients having secondary BSI, 4 patients with Surgical Site Infection (SSI), 1 case of Laboratory Confirmed Blood Stream Infection (LCBSI), 1 case of Symptomatic Urinary Tract Infection (SUTI 1b). Amongst 4 SSIs, there was 1 Deep SSI in Clean Wound 1, Superficial SSI in Contaminated Wound and 1 Superficial SSI in, 1 Organ Space SSI in Dirty Wound. From April to Dec 2020, DAI rate was 1.53(5/3256) device days {CAUTI rate was 1.33 (2/1494), CLABSI rate was 2.78 (3/1077), VAP rate was 1.45 (1/685)} per 1000 device days. Out of 38 HAIs, 76.31% (29/38) HAIs were caused by one organism, 13.15% (5/38) HAIs were due to 2 organisms, 7.89% 3 HAIs were due to 3 organisms and 1 HAI was due to 4 organisms. Amongst 52 organisms causing HCAIs, 77 % (40/52) were aerobes, 5.76% (3/52) anaerobes and 17.30% (9/52) fungi. Out of 40 aerobes, 92.5% (37/40) are gram negative bacilli (GNB) and 7.5% (3/40) gram positive cocci (GPC) i.e. 2 Vancomycin resistant Enterococci and 1 Methicillin resistant staphylococcus haemolyticus.

Amongst GNB causing HAIs in COVID -19 patients 51.35% (19/37) were extensively drug resistant (XDR), 27.02% (10/37) were multi drug resistant (MDR) and 21.62% (8/37) were sensitive. Out of 9 fungi causing HAIs 33% (3/9) were Candida auris (C. auris), 22.22% (2/9) were C. tropicalis, 11.11% (1/9) were Trichosporon asahii, C.glabrata, C.parapsilosis, C.albicans each.

Amongst 38 COVID -19 patients with HAIs, 31 patients had atleast either of comorbid conditions like DM, HTN, ILD or malignancy; 9 patients had received IV steroids, 4 patients received immunosuppressant medication Tocilizumab.

Conclusion:

The risk of developing HAIs is more in COVID 19 patients due to increased use of steroids and immunosuppressant medication. CLABSI was the most frequent DAI seen in COVID -19 ICU.

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