To analyze the etiology and risk factors of central venous catheter (CVCs) infections, and to explore the prophylaxis and treatment for catheter-related infections” Zhang et al (2017).

Abstract:

OBJECTIVE: To analyze the etiology and risk factors of central venous catheter (CVCs) infections, and to explore the prophylaxis and treatment for catheter-related infections.

RESULTS: 1,160 patients were enrolled in 17 years. The incidences of CVCs infection per 1,000 catheter days were descended every 3 years (cases/1,000 days: 21.87, 24.50, 19.95, 12.64, 16.34, 12.40, $\chi^2 = 38.851$, $P = 0.000$). Of the 1,160 patients, 375 were positive for catheter culture, and 397 strains were cultured, among which 173 strains (43.58%) were Gram negative (G-), 130 strains (32.74%) of Gram positive (G+), and 94 strains of fungi (23.68%). Non-fermenting bacteria (Pseudomonas aeruginosa 11.59%, Acinetobacter baumannii 8.82%) was predominant in the G- bacteria, followed by Enterobacteria (Klebsiella pneumoniae 8.06%, Escherichia coli 2.02%); Staphylococcus spp. (Staphylococcus epidermidis 11.84%, Staphylococcus aureus 5.29%) was the main species of G+ bacteria; the main fungi were Candida tropicalis (9.07%) and Candida albicans (5.79%). The catheter infection rate of internal jugular vein, femoral vein and subclavian vein were 36.07% (22/61), 35.52% (119/335), 30.63% (234/764) respectively ($\chi^2 = 2.275$, $P = 0.099$), the incidence of catheter infection of three vein insertion sites per 1,000 catheter days were 18.00, 17.71, 17.08 cases/1,000 days respectively ($\chi^2 = 0.034$, $P = 0.714$). The mean placement time of
infected CVCs in situ was longer than that of non-infected CVCs (days: 20.80±11.68 vs. 17.64±10.77, t = 4.417, P = 0.000). The positive rate was lowest during 1-7 days of indwelling time (19.87%, 30/151). The infection rate was increased with long indwelling time. The positive rate was 44.44% (68/153) as indwelling time was over 30 days. The infection rate was significantly positively related to indwelling time ($\chi^2 = 22.849$, $P = 0.000$). Multiple Logistic regression analysis showed that the infection risk of femoral vein catheter was increased as compared with that of subclavian vein catheter; the infection risk was increased with long indwelling time (OR = 1.306, 95%CI = 1.177-1.480, $P = 0.000$).

CONCLUSIONS: G- are the major pathogens of CVCs infection. Femoral vein catheter and long indwelling time are the risk factors of CVCs infection.

Reference:


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