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Incidence and risk factors of Clostridium difficile infection following acute pyelonephritis

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Objectives: Clostridium difficile infection (CDI) is a common cause of hospital-acquired infection. Incidence and risk factors of CDI following acute pyelonephritis (APN) have not been evaluated.

Methods: We retrospectively collected discharge data from patients over 18 years of age treated with APN from January 2012 to November 2019. CDI was diagnosed by Clostridium difficile toxin assay, gene PCR, culture and sigmoidoscope performed within 30 days. Risk factors for the development of CDI were identified using multivariate logistic regression analysis.

Results: A total of 3036 patients were hospitalized with APN, of which 182 (6%) were diagnosed with CDI within 30 days. At baseline, patients infected with C. difficile were significantly older (74.60±11.09 versus 65.77 ± 16.24, p=0.00). About 82.4% of the patients in CDI group were over 65 years old. Hemoglobin and albumin were lower in the CDI group (10.33±1.88 versus 11.34 ±1.83, p=0.00, 3.10±0.66 versus 3.52±0.63, p=0.00, respectively). The higher percentage of the patients in CDI group received proton pump inhibitors(PPI) (63.7% versus 36.3%, p=0.00). In multivariate logistic regression analysis, independent risk factors for CDI were old age >65 years (OR 2.31, 95% CI, 1.520-3.509, p=0.00), resistant pathogen (OR 2.178, 95% CI, 1.564-3.033, p=0.00), steroid use (OR 1.85,95% CI, 1.236-2.770, p=0.03), PPI use (OR 1.423,95% CI, 1.025-1.977, p=0.35), hypoalbuminemia (OR 2.825, 95% CI, 1.994-4.000, p=0.000).

Conclusions: CDI infection after APN treatment is not uncommon, and CDI prophylaxis should be considered, especially in elderly patients with resistant strains.