

## Two major infections associated with extensive use of PPIs (proton pump inhibitors)

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Two different studies published in two major journals (JAMA and American Journal of Gastroenterology) recently showed a link between proton pump inhibiting medication and two major infections: hospital-acquired pneumonia (in all hospitalized patients) and spontaneous bacterial peritonitis (SBP, in cirrhotic patients with ascites).

In the first situation, a prospective observational study was conducted in a large medical center from Boston, Massachusetts between 2004 and 2007. The researchers examined electronic medical record data on 64,000 adults who were hospitalized for at least 3 days. About half the patients were prescribed proton-pump inhibitors (PPIs) or histamine-2-receptor antagonists (H2RAs) during their stays. In adjusted analyses (traditional and propensity-matched multivariable logistic regression were used to control for confounders), hospital-acquired pneumonia was diagnosed significantly more often among patients receiving acid-suppressive medications than among those not using the drugs (5% vs. 2%). When examined by drug

class, PPIs – but not H2RAs – were significantly associated with pneumonia.

In the second case, was performed a retrospective case-control study. Seventy cirrhotics admitted with paracentesis-proven SBP between 2002 - 2007 were matched with comparable cirrhotics with ascites who were admitted for conditions other than SBP. There were excluded patients on chronic antibiotic prophylaxis or with antecedent gastrointestinal bleeding. Out-patient PPI use at the time of admission was compared between groups, and the effect of covariates was analyzed. Patients with SBP had a significantly higher rate of prehospital PPI use (69%) compared with ascitic cirrhotics hospitalized without SBP (31%,  $P = 0.0001$ ). On multivariate analysis, PPI use was independently associated with SBP (OR 4.31, CI 1.34-11.7), and ascitic fluid protein was protective (OR 0.1, CI 0.03-0.25). In total, 47% of cirrhotic patients receiving PPI in this study had no documented indication for PPI treatment.

It was supposed that PPIs suppress gastric acid secretion, allowing bacterial colonization