

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

Alexandru BURLACU, MD

Cardiology Department, Emergency University Hospital, Bucharest, Romania

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

of the upper gastrointestinal tract, and may predispose to bacterial overgrowth and translocation. This could be the mechanism involved in SBP and probably in hospital-acquired pneumonia.

Having in mind that almost a half of patients had no documented indication for PPI treat-

ment, the authors concluded that prospective studies are needed to determine whether PPIs avoidance can reduce the incidence of infections and improve outcomes. □

---

*Comment on the paper:*

**SJ Herzig, MD Howell, LH Ngo, et al** – Acid-Suppressive Medication Use and the Risk for Hospital-Acquired Pneumonia. *JAMA* 2009; 301(20):2120-2128

**Bajaj JS, Zadornova, Heuman DM, Hafeezullah M, et al** – Association of proton pump inhibitor therapy with spontaneous bacterial peritonitis in cirrhotic patients with ascites. *Am J Gastroenterol* 2009 May; 104(5):1130-1134. Epub 2009 Mar 31