Shirley Louis

In children does the addition of Histamine -2 (H2) blockers to Proton Pump Inhibitor (PPI) therapy for GERD improve nocturnal acid suppression (NAB) ?

Gastroesophageal reflux (GER) is a normo-phsyiologic occurrence that defines the passage of gastric contents into the esophagus with or without vomiting or regurgitation in healthy individuals on a daily basis. [[1]](#endnote-1)When there are associated symptoms such as heart burn and or changes seen on the mucosal level it is termed gastroesophageal reflux disease (GERD). Symptoms generally vary by age group in the pediatric population with infants displaying back arching or food avoidance to adolescents who complain of heart burn. [[2]](#endnote-2) Once symptomatic, treatment options vary but many patients are started on pharmacotherapy, including either Proton Pump Inhibitors (PPI’s) or Histamine-2 (H2) blockers. While on pharmacotherapy a subset of patients may still be symptomatic; some are treated with dual therapy with both a PPI and H2 blocker. The efficacy of monotherapy or dual therapy can be assessed using nocturnal acid breakthrough, which is defined as intragastric pH<4 for more then one continuous hour per night; at this pH symptoms as well as mucosal damage tend to be most prominent. iii

Xue *et al* conducted a randomized control trial in which they evaluated the effects of the addition of H2 blockers to PPI’s on nocturnal acid suppression (NAB). The control group in the study was only on monotherapy with a PPI, while the experimental group took both PPI and H2 blocker therapy.[[3]](#endnote-3) Efficacy of the interventions were assessed using a impedance probe with results revealing more time was spent at a lower pH, meaning less NAB occurred, with a control event rate (CER) of 48 (CI (95% 28.9-57.8) versus the experimental event rate (EER) of 4.4%. Though a difference is seen in the computed event rate, this study had its limitations. The interventions were not randomly assigned to the participants in the study, rather they were started prior to the study meaning they were not blinded to the intervention. Inder *et al* (2008) prospectively studied the efficacy of the addition of H2 blockers to twice daily PPI therapy with data gathered via impedance probe. [[4]](#endnote-4) The study results revealed a CER of 63.79 in those solely taking PPI twice daily versus an EER of 16.67 in those adding H2 blockers at the 95% CI (30.39-63.86). This study also assessed symptom index in both patient groups which resulted in a p=0.10 between the two groups showing no statistical significance though the study reporting that this was likely due to the fact that the study population was too small to reveal a difference. The small n of this study may have lead to type II error; additionally, the study population was already on the therapies prior to the study. Lastly Peghini *et al* (1998) also assessed the efficacy of the addition of and H2 blocker to PPI twice daily therapy. Data was collected using an impedance probe.[[5]](#endnote-5) Unlike the prior studies this study did not provide any numerical outcome data for study subjects. The authors claimed that the addition of an H2 blocker to PPI therapy was efficacious in achieving NAB, though this was hard to verify with any numerical calculations.

Given the limitations of the studies assessed, the question still remains unanswered – should an H2 blocker be added to PPI therapy for improved control of GERD?

Work Cited

1. Vandenplas Y, Rudolph CD, Di Lorenzo C, Hassall E, Liptak G, Mazur L, Sondheimer J, Staiano A, Thomson M, Veereman-Wauters G, Wenzl TG. Pediatric Gastroesophageal Reflux Clinical Practice Guidelines: Joint Recommendations of the North American Society of Pediatric Gastroenterology, Hepatology, and Nutrition (NASPHGAN) and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN). Journal of Pediatric Gastroenterology and Nutrition (2009). 49: pp498-547 [↑](#endnote-ref-1)
2. Winter, harlans, Li UK, Hoppin Alison. Management of
gastroesophageal reflux disease in children and adolescents . website:
[http://www.uptodate.com/contents/management-of-gastroesophageal-reflux-disease-in-children-and-adolescents?source=search\_result&search=gastric+acid+reflux&selectedTitle=1%7E150](http://www.uptodate.com/contents/management-of-gastroesophageal-reflux-disease-in-children-and-adolescents?source=search_result&search=gastric+acid+reflux&selectedTitle=1~150)
Date accessed 1/31/15 [↑](#endnote-ref-2)
3. Xue, S et al. Bedtime H2 Blockers improve nocturnal gastric acid control in GERD patients on proton pump inhibitors. Aliment Pharmacol Ther 2001; Volume 15: 1351-1356 [↑](#endnote-ref-3)
4. Inder Mainie, MRCP, Radu Tutuian, MD Donald O castell, MD Addition of a H2 Receptor Antagonist to PPI Improves Acid Control and Decreases Nocturnal Acid Breakthrough. J Clinical Gastroenterology. Volume 42: 676-679, Number 6 July 2008 [↑](#endnote-ref-4)
5. Peghini Paolo, Katz Phillip, Castell Donald. Ranitidine Controls Nocturnal Gastric Acid Breakthrough on Omeprazole: A controlled Study in Normal Subjects Gastroenterology 1998 Volume 115:1335-1335 [↑](#endnote-ref-5)