Concise Commentary: Antibiotic Prophylaxis for Endoscopic Needle Aspiration of Pancreatic Cystic Lesions: Bursting the Bubble?

Rintaro Hashimoto¹ · John G. Lee¹

Published online: 4 July 2019

© Springer Science+Business Media, LLC, part of Springer Nature 2019

Endoscopic ultrasound (EUS) fine-needle aspiration (FNA) is commonly performed during endoscopic evaluation of pancreatic cystic lesions (PCL), a technique that has revolutionized the diagnosis and management of these lesions. Since biopsy of these lesions requires introducing a needle from the contaminated GI tract into the (presumably) sterile lesion, empiric (prophylactic) administration of post-procedural antibiotics has been adopted, although few data support this practice. ASGE and ESGE guidelines recommend prophylactic antibiotic use for EUS-guided sampling of cystic lesions [1, 2], usually with a single intravenous dose of an antibiotic given after the procedure followed by oral therapy for 3–5 days. This recommendation was based on 457 patients who underwent EUS FNA of 554 lesions, of which only 22 were cysts with 14% having complications after cyst FNA [3]. Since 1997, when this report was published, multiple studies have shown EUS FNA of PCL to be safe with a low risk of complications. For example, a single-center retrospective study of 253 patients showed no benefit for antibiotic prophylaxis with the only case of suspected cyst infection occurring in a patient who had antibiotic prophylaxis [4]. The results of a multicenter, randomized, double-blind clinical trial of 226 patients evaluating prophylactic antibiotic use were recently reported in abstract form; since no cyst infection occurred in either group, the authors concluded that no prophylaxis was not inferior to ciprofloxacin prophylaxis in preventing cyst infection after EUS FNA [5]. Finally, a recent meta-analysis showed that risk of infections after EUS FNA of PCL was 0.44%, and that incidence of adverse events associated with prophylactic periprocedural antibiotic use was 2.77% [6], suggesting

that prophylactic antibiotics were not beneficial and could be harmful.

In this issue of *Digestive Diseases and Sciences*, Faciorusso et al. addressed the question of whether the use of prophylactic antibiotics was necessary after EUS FNA of PCL [7]. The authors routinely used antibiotic prophylaxis before 2010 but stopped doing so afterward. They retrospectively analyzed 335 patients who underwent EUS FNA from 2006 to 2018 using a 1:1 propensity score match intended to reduce the bias that accrues from simply comparing two cohorts. A total of 135 patients who had antibiotic prophylaxis (ATB group) were selected and compared with an equal number of patients who did not receive antibiotic prophylaxis (NATB group). Cyst infection was observed in one patient with intraductal papillary mucinous neoplasm (IPMN) and one with pseudocyst (1.4%) in the ATB group and in 2 with IPMN and one with pseudocyst (2.2%) in NATB group, ($p=0.65$). The ATB group had 10 (7.1%) adverse events, of which 2 were serious (1.4%), whereas the NATB group had 8 (5.8%) adverse events, of which 1 (0.7%) was serious. Although the authors found no statistically significant differences, there were more infections (3 vs. 2) in the NATB group with the only patient with serious infection requiring hospitalization being in the NATB group, it is possible that a larger sample may have yielded significant differences.

This study had several limitations. First, the authors did not define nor provide details about how they diagnosed the cyst infections. Second, they stopped using antibiotic prophylaxis after 2010, presumably believing that it was unnecessary; if so, such a belief could bias the interpretation of the current results since retrospective determination of an adverse event could be clouded by the belief that antibiotic prophylaxis was unnecessary. Although they used 1:1 propensity matching in attempt to control bias, this technique accounts only for observable covariate, i.e., it would not control hidden bias.

✉ Rintaro Hashimoto
rinhashimoto@gmail.com

¹ Division of Gastroenterology and Hepatology, Department of Medicine, H. H. Chao Comprehensive Digestive Disease Center, University of California, Irvine, 333 City Blvd West, Suite 400, Orange, CA 92868, USA

Despite these limitations, this study provides additional evidence that antibiotic prophylaxis may not be needed after EUS FNA of cysts, especially given the risks associated with indiscriminant antibiotic use balanced against the rarity of procedure-related serious infections. Even if antibiotic prophylaxis is still used, the institution of a single dose or of a shorter course might be a reasonable first step toward simplifying this practice.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. Polkowski M, Jenssen C, Kaye P, et al. Technical aspects of endoscopic ultrasound (EUS)-guided sampling in gastroenterology: European Society of Gastrointestinal Endoscopy (ESGE). *Endoscopy*. 2017;49:989–1006.
2. ASGE Standards of Practice Committee, Muthusamy VR, Chandrasekhara V, et al. The role of endoscopy in the diagnosis and treatment of cystic pancreatic neoplasms. *Gastrointest Endosc*. 2016;84:1–9.
3. Wiersema MJ, Vilmann P, Giovannini M, et al. Endosonography-guided fine-needle aspiration biopsy: diagnostic accuracy and complication assessment. *Gastroenterology*. 1997;112:1087–1095.
4. Guarner-Argente C, Shah P, Buchner A, et al. Use of antimicrobials for EUS-guided FNA of pancreatic cysts: a retrospective, comparative analysis. *Gastrointest Endosc*. 2011;74:81–86.
5. Colan-Hernandez J, Sendino O, Loras C, et al. Antibiotic prophylaxis for EUS guided FNA of pancreatic cystic lesions: a multicenter, randomized and double blinded clinical trial. *Endoscopy*. 2019;51:S112–S113.
6. Zhu H, Jiang F, Zhu J, et al. Assessment of morbidity and mortality associated with endoscopic ultrasound-guided fine-needle aspiration for pancreatic cystic lesions: a systematic review and meta-analysis. *Dig Endosc*. 2017;29:667–675.
7. Facciorusso A, Buccino VR, Turco A, et al. Antibiotics do not decrease the rate of infection after endoscopic ultrasound fine-needle aspiration of pancreatic cysts. *Dig Dis Sci*. (Epub ahead of print). <https://doi.org/10.1007/s10620-019-05655-x>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.