ORIGINAL ARTICLE

Use of antimicrobials for EUS-guided FNA of pancreatic cysts: a retrospective, comparative analysis

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Background: Pancreatic cystic lesions present a challenge for patients and physicians alike. Morphology alone is inaccurate in discriminating lesion pathology, and use of EUS-guided FNA (EUS-FNA) improves accuracy. Current American Society for Gastrointestinal Endoscopy guidelines recommend prophylactic antibiotics during FNA of cystic lesions to minimize infection risk. However, evidence pertaining to infection risk has been conflicting. The use of prophylactic antibiotics might not be free of other adverse events and might not prevent infection.

Objective: To assess the impact of antimicrobial therapy for prophylaxis during EUS-FNA of pancreatic cysts.

Design: Retrospective cohort study.

Patients: This study involved all patients who underwent EUS-FNA of pancreatic cysts at one institution from May 2007 to April 2010.

Intervention: Antibiotic prophylaxis for EUS-FNA.

Main Outcome Measurements: Infection of a pancreatic cyst, fever, or bacteremia after EUS-FNA. Secondary variables included other complications of the procedure related to the use of prophylaxis (ie, allergic reactions, secondary infections).

Results: EUS-FNA was performed on 253 patients in 266 procedures. Antibiotics were used in 88 endoscopy cases (ATB group), whereas no antibiotics were used in 178 cases (NATB group). There were no differences in patient or cyst characteristics between groups. There were 4 major complications in the NATB group (localized bleeding, 2; pancreatitis, 1; bile leakage, 1) and 2 in the ATB group (possible cyst infection, 1; bile leakage, 1) ($P = 1.0$). Eight mild adverse events were observed in the NATB group and 6 in the ATB group ($P = .56$). Infections and antibiotic-related complications occurred in 1 (0.6%) (transient fever) in the NATB group and 4 (4.5%) in the ATB group (local allergic reaction, 2; possible cyst infection, 1; *Clostridium difficile* diarrhea, 1) ($P = .04$).

Limitations: Retrospective analysis.

Conclusion: The incidence of infectious complications after EUS-FNA of pancreatic cystic lesions, with or without antibiotic prophylaxis, appears very low. We have not observed a protective effect from periprocedural prophylactic antibiotic administration. (Gastrointest Endosc 2011;74:81-6.)

Abbreviations: ATB, antibiotic; EUS-FNA, EUS-guided FNA; NATB, no antibiotic.

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Pancreatic cystic lesions present a diagnostic and management challenge for patients and physicians. The increased access to abdominal imaging techniques such as CT or magnetic resonance imaging has increased the number of cystic lesions diagnosed. Ten percent to 15% of pancreatic cystic lesions are primary cystic neoplasms.[1] Of these, 70% are mucinous cystic neoplasms or intraductal papillary mucinous neoplasms.[1] These involve a potential progression to malignancy. Morphology alone is inaccurate in discriminating neoplastic from nonneoplastic pancreatic cystic lesions.[2] Use of EUS-guided FNA (EUS-FNA) improves the accuracy.

The safety of EUS-FNA of pancreatic solid masses has been demonstrated in previous studies.[3-5] The incidence of bacteremia after upper EUS-FNA in prospective studies has been estimated to be 0% to 6%.[3-6] However, in these studies in patients with solid pancreatic lesions, bacteremia was asymptomatic. Evidence pertaining to infection risk for EUS-FNA of pancreatic cystic lesions has been conflicting.[7-10]

Acknowledging insufficient evidence to affirm benefit, routine use of prophylactic antibiotics has been advocated in guidelines.[11] The use of these antimicrobial agents increases the cost of the procedure and may increase the number of adverse events related to allergic reactions, drug resistance, and secondary infection. Because evidence supporting antibiotic prophylaxis is equivocal, its use in many centers is endoscopist dependant. Two endoscopists in our institution do not routinely use prophylaxis, whereas one does. The objective of this study was to determine the utility of antimicrobial therapy for prophylaxis during EUS-FNA of pancreatic cystic lesions.

Take-home Message

- The incidence of pancreatic cyst infections after an EUS-guided FNA either with or without antibiotic prophylaxis is very low. Antibiotic prophylaxis is not free of adverse events, and it might not prevent infection for this indication.

PATIENTS AND METHODS

Data collection

A retrospective review of all patients who underwent EUS-FNA at the Hospital of the University of Pennsylvania from May 2007 to April 2010 was performed. Standardized data collection sheets were used to extract relevant data from the previous visits at doctors' offices and from endoscopy, radiology, and pathology reports. Patient demographic and clinical data, lesion characteristics, and procedure data were documented. For the analysis of the use of antibiotics before, during, or after the procedures, 5 different documents were reviewed: (1) endoscopists' prescriptions; (2) endoscopy reports; (3) anesthesiology reports; (4) nurses reports at admission, during procedures, and after procedures; and (5) previous medications. All patients treated with antibiotics were included in the exposed cohort (ATB group). Patients currently in treatment with any antibiotic for unrelated causes were also included in this group. The rest of the patients not treated with antibiotics were included in the unexposed cohort (NATB group).

Follow-up data for final diagnosis, complications, and outcome were assessed by using medical records, registered telephone calls, and doctor referral letters. As part of the standard of practice by perioperative nursing staff, patients were called within 48 hours after procedures for assessment of adverse events. Patients with voiced adverse events were referred to the GI clinical nurse pool, and contact was documented via a telephone message in the hospital system. Those patients in whom a minimal follow-up was not available were excluded from the final analysis of complications. The study protocol was approved by the Institutional Review Board of the University of Pennsylvania.

Outcome

Primary variables included infection of a pancreatic cyst, fever, or bacteremia after EUS-FNA. Secondary variables included other complications of the procedure related to the use of prophylaxis (ie, allergic reactions, secondary infections).

Complications

Complications were graded as "mild" (not clinically significant or no need for hospitalization) or "severe" (unplanned hospital admission, need for repeat endoscopic or radiologic intervention).

Statistical analysis

Data were expressed as mean ± standard deviation (SD) or proportions. Results were analyzed by using the χ^2 test and Fisher exact test for qualitative variables and t test for quantitative parameters. A P value $< .05$ was considered statistically significant. Statistical analysis was performed with the SPSS Statistical Package (version 17.0, SPSS Inc, Chicago, Ill).

RESULTS

General description

A total of 317 EUS procedures were performed to evaluate pancreatic cystic lesions. FNA was not performed in 51 cases, based on the size or location of the lesion, the indication, or patient intolerance to the procedure. EUS-FNA was completed in 266 endoscopies on 253 patients (13 patients had repeat EUS-FNA studies between 1 and 3 years after the initial study). Of the procedures included in the study, 97% were performed on an outpatient basis.