



Bacterial and fungal colonization of pancreatic stents in children with chronic pancreatitis.

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Introduction

The prevalence of chronic pancreatitis (CP) in children has increased in recent years, and it may result in growth retardation and malnutrition. The pancreatic duct system is considered sterile. However, pancreatic stents (PS), placed during an endoscopic retrograde cholangiopancreatography (ERCP), a well established therapy in children with CP, are prone to colonization by microorganisms, especially enteric flora, that can create biofilm on the stent surface. Bacterial and fungal colonization may potentially contribute to adverse patient outcomes. The aim of this prospective hospital-based study was to determine the incidence of microbial PS colonization in relation to etiology of CP, the use of antimicrobial prophylaxis before ERCP, and the indwelling time of PS.

Methods

The study group consisted of 22 patients (pts) with CP, who underwent ERCP at the Children's Memorial Health Institute in Warsaw between November 2013 and September 2015 (Table 1).

Table 1. Characteristics of the study group

Numer of patients	22
Sex (Female/ Male)	13 F/ 9 M
Age (years)	median 13 (range 6- 17)
Etiology of CP	number of patients
<ul style="list-style-type: none"> idiopathic pancreatitis CFTR and/or SPINK1 gene mutation anatomic anomalies of the pancreatic duct PRSS1 gene mutation 	<ul style="list-style-type: none"> 9 7 4 2
Antibiotic treatment:	
<ul style="list-style-type: none"> prophylaxis before ERCP due to acute pancreatitis episode 	<ul style="list-style-type: none"> 12 patients, imipenem 1 patient; 12 days of imipenem treatment
Median duration of PS emplacement (days)	137 (range 36-236)
Number of removed PS	29
PS replacement	18 pts

The removed PS were cultured on solid (quantitative culture) and liquid media, and incubated in both aerobic and anaerobic conditions. Isolation, identification and detection of mechanisms of antimicrobial resistance were performed by standard microbiological methods (API, VITEK 2 and a disc diffusion method according to EUCAST guidelines)

Results

All investigated PS showed microbial growth. A total of 79 bacterial and fungal strains were isolated, and all samples were polymicrobial with high microbial load 10^3 - 10^5 CFU/mL, regardless of the patients' antimicrobial treatment

The most frequently isolated organisms were Enterobacteriaceae. Gram-negative non-fermenting rods were not found (Figure 1 and 2).

Figure 1: Microorganisms isolated from PS of patients with CP (Total no of isolates, n=79)

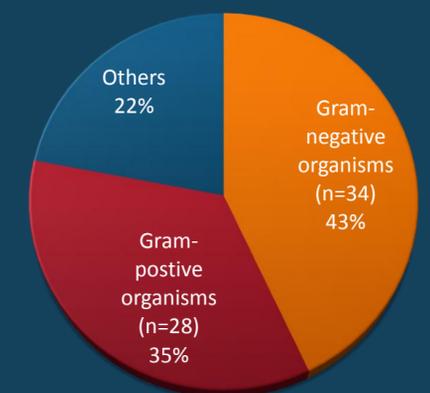
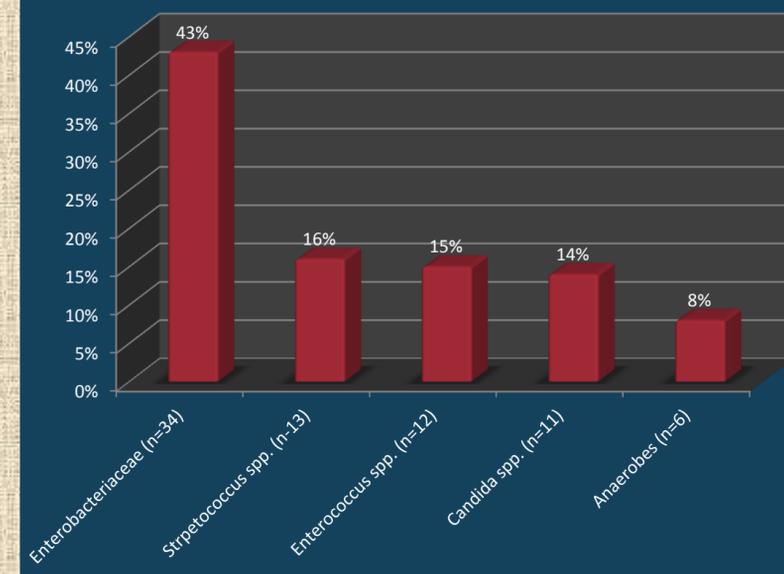


Figure 2: Distribution of microorganisms isolated from PS of patients with CP (total no of isolates, n=79)



Subsequent cultures of PSs from the same patients showed similar patterns of colonisation, especially among Enterobacteriaceae.

The most frequently isolated species were: *E. coli*, *Klebsiella spp.* and *Enterobacter spp.*

No significant rate of antimicrobial resistance was observed: only 15% of Enterobacteriaceae were ESBL and/or AmpC positive and all were carbapenem susceptible.

Conclusions

Pancreatic stents are highly colonized with the diverse microbial flora, including potential pathogens.

The role of such colonization in the pathogenesis of exacerbation of chronic pancreatitis requires further investigations, however it may potentially pose a risk of secondary infections of the pancreas.