Analysis of pancreatic cyst microbiome

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Pancreatic Cancer

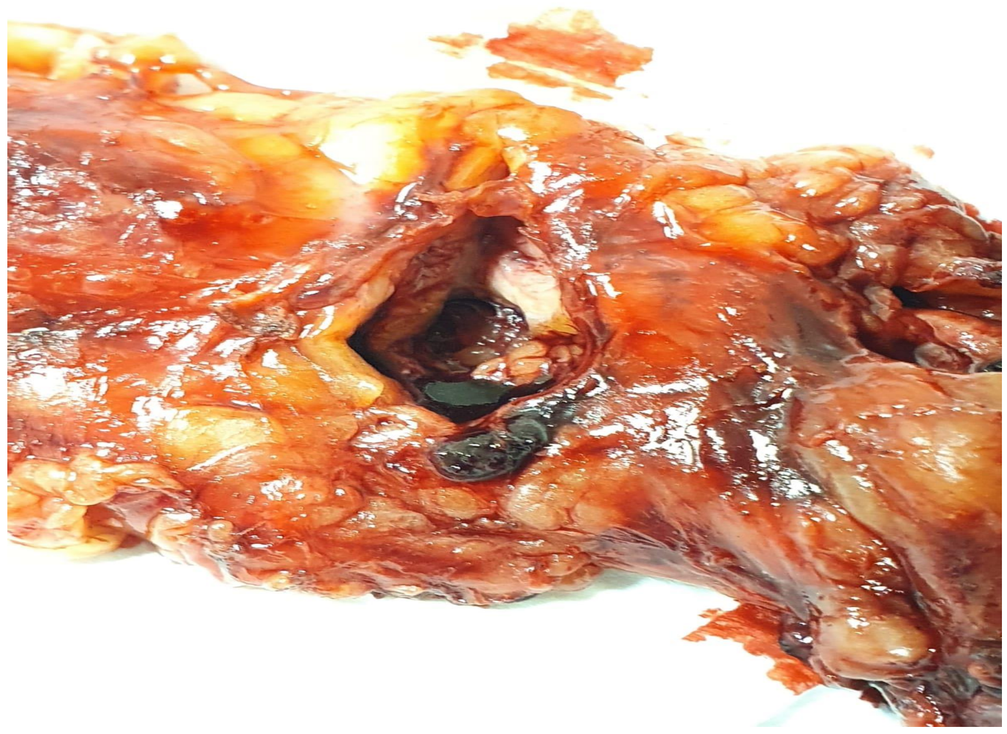
The incidence of pancreatic cancer (PC) is projected to increase worldwide with annual growth of 1,1% signifying that this neoplasm is becoming a substantial health problem. Despite advances made in surgical treatment and chemotherapy over the past decades, improvement in survival rate of patients with PC is very low and the 5 year survival goal is achieved only in 30% of the patients after resection and adjuvant therapy. It is estimated that pancreatic cancer will become the second leading cause of deaths by cancer by the year 2030.

Objectives

So far, a significant relationship between the occurrence of bacterial colonization and the development of cancer or lymphoma in the organs other than the pancreas has been demonstrated. The recent studies have indicated the presence of unique microflora also in pancreatic juice. The aim of the study is to assess the correlation between bacteriological cultures from pancreatic cyst fluid and postoperative histopathological examinations.

Importance of Pancreatic Cyst Fluid Analysis

One of major risk factors for PDAC (Pancreatic Ductal Adenocarcinoma) is pancreatic cystic neoplasms (PCNs), including serous cystic neoplasm (SCN), mucinous cystic neoplasm (MCN) and *intraductal papillary mucinous neoplasm* (IPMN). Improved diagnosis shows that cystic lesions in pancreas occur far more often than has been previously estimated. Despite novel diagnostic tools including endoscopic ultrasonography, differentiation between the various types of PCN is a significant clinical challenge. Pancreatic cysts harbor potential to develop into malignant cancer. Currently, there are no optimal biomarkers for this risk stratification and identifying cysts that require complicated surgical treatment remains a challenge in this field. Pancreatic surgery is associated with a 30-40% risk of postoperative complications and a 3-10% mortality rate, hence the decision to operate should be clearly justified by medical indicators, such as cancer diagnosis or high risk of this cancer. Therefore, a comprehensive understanding of the risk factors for pancreatic cancer development in pancreatic cysts is of great clinical significance.



Pancreatic cyst, copyright, Department of General and Transplant Surgery, Barlicki Hospital, Medical University of Lodz

Sample Inclusion criteria:

All patients treated at the Department of General and Transplant Surgery, Barlicki Hospital, Lodz, aged 18 to 80 years, with pancreatic cysts, including: IPMN, MCN, SCA, SPT. All patients who gave written consent to the treatment before operation (e.g. pancreatectomy, percutaneous drainage, pancreatojejunostomy)

Exclusion criteria:

Patients who do not give their consent to the treatment.

Cyst sample collection is in its concluding phase. So far approximately 30 samples have been collected.

Methods

The is a retrospective study and involves the analysis of fluid samples from the pancreatic cysts. These samples for testing are taken ex vivo (from postoperative material) using a 5 ml syringe with a 5 mm needle. Bacterial cultures are performed in the bacteriology laboratory of USK No. 1 in Lodz. The Bioethics Committee of the Medical University of Lodz has given their consent to this retrospective analysis and the above-mentioned study. (Decision No. RNN/04/23/EC of January 10, 2023)

Discussion

Although the human gastrointestinal tract has been proven to be colonized by a huge number of microorganisms, the bacteriological characteristics of the fluid contents of pancreatic cystic tumors are still largely unknown. Recent studies have confirmed the presence of some specific, previously undescribed bacterial strains in this location. Therefore, there is growing interest in the possible relationship between the presence of these bacteria in pancreatic cysts and the development of cancer.

References:

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