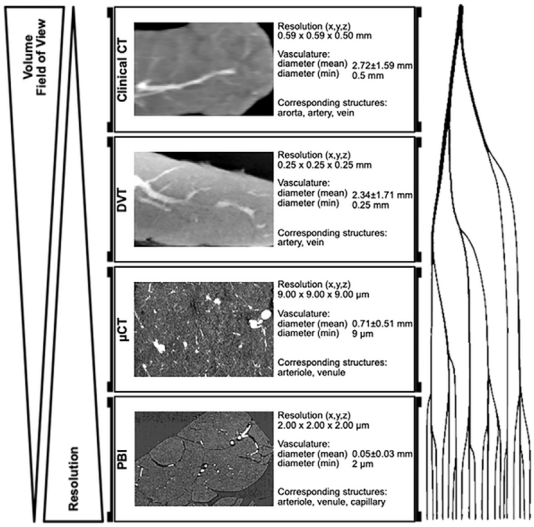
Clinical computed tomography, digital volume tomography, micro-computed tomography and synchrotron-based propagation-based imaging were applied consecutively. Radiopaque intravascular casting was used to compensate low-density variations between vessels and surrounding parenchyma, enabling improved vessel delineation. Vascular networks were segmented by semi-automatic region-growing tools. Conventional corrosion casting was performed as a control.

Results: Fields of view correlated inversely with attainable resolution from a whole organism level down to capillary structures with a voxel edge length of 2.0µm. Proof of feasibility was performed by correlating the vascular network with tissue sections and subsequent immunohistochemistry revealing highly vascularized regions to be intra-islet capillaries of islets of Langerhans. Generated 3D-datasets allowed for three-dimensional multiscale qualitative and quantitative organ and vessel structure analysis. Branching of the vascular networks of specimens was analyzed by established classification systems and unsupervised learning using a Gaussian Mixture Model.

Conclusion: Beyond the present study, the method shows potential for application across a wide range of morphology analyses and pathologies based on microstructural alterations and might possibly provide microstructural blueprints for biotissue engineering.



EP02F-024

IMMUNE CHECK-POINT INHIBITORS EXPRESSION ON TUMOR INFILTRATING LYMPHOCYTES IN PANCREATIC CANCER

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Introduction: Pancreatic ductal adenocarcinoma (PDAC) is one of the most lethal solid tumors with poor outcomes to conventional chemotherapy. The pancreatic tumor microenvironment (TME) was extensively analyzed with the perspective of powering up immunotherapies for PDAC.

Materials and methods: In this study we aimed to characterize PDAC TME by flow cytometry and to profile the expression of the ICI in the tumor Infiltrating lymphocytes (TILs). For this, we dissociated the pancreatic tumor tissues using a combined enzymatic and mechanic protocol. We labeled the obtained cells with fluorescent conjugated antibodies against EpCam, CD3, CD4 and CD8 in order to analyze the epithelial origin population of cells, the T lymphocytes population, CD4, CD8 and double negative T cells subsets. Considering the potential of PD-1 and CTLA-4 immune check point receptors in immune attack signaling, with impact on therapy modulation, we also labeled the obtained cells with fluorescent conjugated antibodies against these molecules.

Results: A pilot cohort of 10 patients was analyzed in this study. The flow cytometry analysis revealed the EpCam positive cells and the infiltrating T cells within the PDAC. More, based on the PD-1/CTLA-4 labeling we were able to highlight the expression of these immune check point molecules on the analyzed cells and their distribution on the cells populations and subpopulations.

Conclusions: Flow cytometry is a robust analysis method that provides rapid and accurate results on cells populations and subpopulation within the tumor microenvironment, with impact on the personalized approach of the oncologic patient.

EP02F-025

INTRAVENOUS LIDOCAINE FOR REFRACTORY PAIN IN PATIENTS WITH PANCREATIC DUCTAL ADENOCARCINOMA AND CHRONIC PANCREATITIS (LIDOPAN): A MULTICENTER PROSPECTIVE NON-RANDOMIZED PHASE II TRIAL

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Introduction: Refractory pain is a major clinical problem in patients with pancreatic ductal adenocarcinoma (PDAC) and chronic pancreatitis (CP). Effective therapies to reduce pain are needed. Intravenous lidocaine is used in clinical practice, but its efficacy has not been studied prospectively.
Methods: Multicentre prospective non-randomized phase II trial including patients with moderate or severe pain (NRS $\geq$ 4) associated with PDAC or CP in 5 Dutch centers. An intravenous lidocaine bolus of 1.5mg/kg, was followed by continuous infusion at 1.5 mg/kg/hour. The dose was raised every 15 minutes until treatment response (maximum 2mg/kg/hour) and administered for two hours. Primary outcome was the mean difference in pain severity, pre-infusion and day 1 (Brief Pain Inventory [BPI]: 1-10). A BPI decrease $\geq$ 1.3 points was considered clinically relevant.
Results: Overall, 30 patients were included, 19 with PDAC (63%) and 11 with CP (37%). The mean difference in BPI was 1.1 (SD$\pm$1.3) for patients with PDAC and 0.5 (SD$\pm$1.7) for CP patients. A clinically relevant decrease in BPI was reported in 9/29 patients (31%), this response lasted up to one month. No serious complications were reported, and only three minor complications. Treatment with lidocaine did not impact quality of life.
Conclusion: Although intravenous lidocaine in patients with PDAC and CP did not show an overall clinically relevant reduction of pain, in one third of patients a clinically relevant response was observed which lasted up to one month. Patients in whom traditional multimodal pain treatment does not suffice may be counseled for intravenous lidocaine.

EP02F-026
PRELIMINARY STUDY OF THE DIAGNOSTIC PERFORMANCE OF THE TUMOR MARKER CA 19.9 IN THE DIAGNOSIS OF LOCALLY ADVANCED OR METASTATIC PANCREATIC ADENOCARCINOMA

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Introduction: CA 19.9 is expressed in 95% of the population and exhibits sensitivity and specificity in pancreatic cancer diagnosis. Its value appears to be closely related to tumor volume and the presence of hidden metastases. However, its primary utility lies in monitoring disease progression. In some guidelines, elevated CA 19.9 levels, combined with other high-risk factors such as tumor size and severe pain, are considered suggestive of peritoneal carcinomatosis.
Materials and methods: All patients with biliopancreatic tumor pathology were prospectively included in the study, with CA 19.9 determinations performed at the time of diagnosis. A total of 13 patients were included up to this point. CA 19.9 levels were correlated with the final intraoperative or histopathological diagnosis in cases where resection was performed.
Discussion: CA 19.9 is valuable in diagnosing patients with suspected malignant biliopancreatic processes. The reference level considered normal is very low (< 37-50 U/ml), especially as its elevation is sometimes associated with inflammatory processes.

Several oncological studies suggest that CA 19.9 values exceeding 100 U/ml should prompt multidisciplinary committees to consider neoadjuvant therapy. In some instances, CA 19.9 levels may not be directly proportional to tumor size or the presence of distant metastases. Complementing the diagnosis with a Positron Emission Tomography scan or even a prior exploratory laparoscopy is worth considering. The limited number of cases included in the study at this stage does not allow for clear guidelines on the appropriate approach. However, once concluded, it may provide clear insights into the management of these patients.

EP02F-027
INDOCYANINE GREEN (ICG) ENHANCED IMAGING APPLICABILITY IN PANCREATIC SURGERY: A SYSTEMATIC REVIEW

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Introduction: While indocyanine green (ICG) has shown promise in various surgical procedures, its application in pancreatic surgery remains a subject of ongoing investigation. We performed a systematic review to assess the clinical utility of ICG in pancreatic surgery.
Method: We searched electronic databases for articles detailing ICG use in pancreatic surgery. We collected two main types of variables: related to the ICG (brand, dosage, timing, route of administration, and purpose) and related to the procedure, such as indication for surgery and operation performed.
Results: A total of 46 articles encompassing 366 patients were included in the final review, with 47.8% case reports. The majority administered ICG intravenously (79.1%) and intraoperatively (87.5%). Other routes included direct pancreatic parenchymal or biliary tree injection. The timing of administration varied from 2 weeks preoperatively to immediately preoperatively. Regarding the dosage of ICG administered, 30.4% of studies used 2.5-5mg total. ICG was employed for various purposes (Figure 1), classified in five categories: Vessels/Blood Flow, Parenchyma/Tumor, Biliary Tree, Lymphatics, and Other. Within the Vessels/Blood Flow category, 58% of the studies, ICG predominantly assessed remnant stomach blood flow and splenic