twin pregnancies and in case of unbalanced blood flow often resulting in foetal loss without treatment. It is characterized by a disproportionate blood flow between twins due to vascular anastomoses leading to severe complications. To validate ultrasound findings and identify missed or newly developed anastomoses after laser coagulation in TTTS, dye can be injected into the umbilical cord vessels. However, deep anastomoses can be missed since gross pathology identification often does not provide the identification of both superficial and deep anastomoses in TTTS placentae. Through 3D virtual histology using X-rays and following segmentation work we are able to visualize vessel trees of dye injected TTTS placentae in 3D showcasing anastomoses with actual intersections which are important for determining a change in behaviour of said vessels.
Methods: Placentae were prepared, injected with dye, and fixed with formalin according to Turowski [3]. The FFPE samples were scanned using a laboratory phase-contrast X-ray tomography setup by Histomography GmbH. The FFPE samples were cut into histological slides and compared to the segmented vessel trees after. Segmentation was performed using the open source 3D Slicer software, marking the dyed vessels based on thresholding of the measured intensities, followed by cleaning up artifacts with Gaussian smoothing.
Results: Downstream, anastomoses were identifiable in both histological slides and the unedited tomography scans. The vessel tree can be visualized based on grey levels with VG Studio Max. The segmentation performed with 3D Slicer can be used for further analysis like intervascular connectivity and blood flow simulations.
Conclusion: Using 3D virtual histology and segmentation, we can visualize placental vessel trees in 3D, highlighting intersections critical to understanding vessel behaviour. This method can enhance understanding of TTTS and contribute to more accurate diagnostics, staging, and future research on vascular structures.

OFP-04-012
A novel pattern-based histological approach to IBD-like colitis in children with PID
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Background & Objectives: Primary immunodeficiencies (PID) can present as very early-onset (VEO) IBD or monogenic disease (MD), associated with gene defects in mucosal immune response. We, hereby, present our PID case series using a novel pattern-based histological approach highlighting the IBD-like morphology in ileocolonic biopsies.
Methods: A total of 33(13 girls and 20 boys) PID cases with GI symptoms were retrospectively evaluated for inflammatory patterns categorized as UC-like, CD-like, enterocolitis-like, apoptotic, eosinophil-rich, IBD-unclassified (IBD-U), and mild colitis. Clinicopathological features including age at diagnosis, symptoms, genetic and survival data were assessed in correlation with histologic data.
Results: Mean age at diagnosis and symptom onset were 44 and 56.85 months, respectively. PID cases composed of 6 severe combined immunodeficiency(SCID), 4 chronic granulomatous disease, 3 common variable immunodeficiency(CVID), 2 IgA deficiency, 2 other Ig deficiencies, and 1 hyper-IgM syndrome while monogenic defects including 4 MEFV and 3 LRBA mutations, 1 IL10R deficiency, 1 IL21 deficiency, 1 DGAT mutation, 1 prolidase deficiency, 1 RIPK1 defect, 1 Bruton's tyrosine-kinase deficiency, and 2 DOCK8 deficiency were detected in the remaining 15 cases. MDs showed UC-like (n=2), CD-like (n=2), IBD-U (n=1), and 2 mixed (apoptotic+UC-like/CD-like), 1 apoptotic, 1 enterocolitis-like pattern and 2 mild colitis. Non-monogenic cases (50%) comprised of 3 UC-like, 4 CD-like, 1 IBD-U, 4 mild colitis, 2 mixed (apoptotic+IBD-U/eosinophilic), and 1 eosinophilic patterns. No significant difference was found between MD and non-MD cases for colitis patterns, age, and survival. MDs (12:3) showed a higher M/F ratio compared to non-MDs (8:10) (p=0,037). IBD-like patterns were significantly more common before the age of 6, compatible with a diagnosis of VEO-IBD (68,8%, p=0,024) which was associated with monogenic disease in 50% of the cases.
Conclusion: IBD-like colitis seems to be more common in young children with PID which emphasizes the need for a multidisciplinary approach for accurate diagnosis and treatment of monogenic disease.

OFP-05 Oral Free Paper Session Breast Pathology

OFP-05-001
Ki-67 and lymph node status as predictive biomarkers for chemotherapy decision-making in moderately differentiated breast cancer
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Background & Objectives: The decision to offer or withhold adjuvant chemotherapy (aCT) in patients with moderately differentiated (grade 2) luminal breast cancer, particularly those with a Ki-67 index between 5% and 30%, remains a clinical challenge. Although molecular tests can provide helpful information, they are costly and may not be accessible. On the other hand, immunohistochemistry is a more affordable and widely accessible option.
We aim to evaluate the ability of immunohistochemistry to correctly determine molecular subgroups in grade 2 breast cancer. We also assessed the predictive value of Ki-67 expression and lymph node status (pN) in determining the need for chemotherapy.
Methods: A retrospective analysis was performed on 59 patients with grade 2 breast carcinoma who underwent surgery followed by adjuvant therapy between January 2019 and December 2022. Logistic regression models were used to evaluate the relationship between Ki-67 expression, pN, and aCT. The optimal Ki-67 cutoff for selecting patients who would benefit from chemotherapy was determined using the receiver operating characteristic (ROC) curve.
Results: The median age of the cohort was 54.3±11.9years, with a median tumour size of 18.9±13.1mm. Most tumours (86.4%) were "no special type" carcinomas, and ductal carcinoma in situ was observed in 84.7% of cases. Metastatic involvement was found in 35.1% of sentinel lymph nodes. Immunohistochemical classification using a Ki-67 cutoff of 22% showed strong agreement with PAM50/Prosigna's molecular subtypes (Cramér's V=0.476,*p=0.001*). The ROC analysis for Ki-67>19.5% showed moderate predictive ability for the benefit of aCT (AUC=0.660). Logistic regression revealed that Ki-67>19.5% (OR=9.996,*p=0.005*) and pN (OR=14.015,*p=0.002*) were significant predictors of aCT benefit.
Conclusion: Immunohistochemistry-based molecular subtyping offers a cost-effective and reliable alternative to molecular testing. Regarding aCT, our findings suggest that Ki-67>19.5% and positive pN status could potentially serve as useful biomarkers for deciding whether a patient should undergo aCT, particularly when molecular testing is not available.

OFP-05-002
Breast carcinomas with low oestrogen receptor expression (1-10%): characteristics and therapeutic implications
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Background & Objectives: Invasive breast carcinomas with low oestrogen receptor (ER) expression (1-10%) represent a rare subgroup. The