Virchows Archiv

European Journal of Pathology

Volume 479 · Supplement 1 · August 2021

Springer

428 • 479(S1) S1-S320 (2021)
ISSN: 0945-6317 (print)
ISSN: 1432-2307 (electronic)

European Society of Pathology

Oral Free Paper Sessions

OFP-01	Autopsy Pathology
OFP-02	Breast Pathology
OFP-03	Cardiovascular Pathology
OFP-04	Cytopathology
OFP-05	Dermatopathology
OFP-06	Digestive Diseases Pathology - GI
OFP-07	Digestive Diseases Pathology - Liver/Pancreas
OFP-08	Electron Microscopy
OFP-09	Endocrine Pathology
OFP-10	Gynaecological Pathology
OFP-11	Haematopathology
OFP-12	Head & Neck Pathology
OFP-13	History of Pathology
OFP-14	Infectious Diseases Pathology
OFP-15	IT in Pathology
OFP-16	Molecular Pathology
OFP-17	Nephropathology
OFP-18	Neuropathology
OFP-19	Ophthalmic Pathology
OFP-20	Other Topics
OFP-21	Paediatric and Perinatal Pathology
OFP-23	Pulmonary Pathology
OFP-24	Soft Tissue and Bone Pathology
OFP-25	Uropathology

Oral Free Paper Sessions
One-Day Computational Pathology Symposium
One-Day Molecular Pathology Diagnostics and Translational Research Symposium

CP-03	One-Day Computational Pathology Symposium – Evening Session
MD-OFP-01	One-Day Molecular Pathology Diagnostics and Translational Research Symposium

Posters

PS-01	Autopsy Pathology
PS-02	Breast Pathology
PS-03	Cardiovascular Pathology
PS-04	Cytopathology
PS-05	Dermatopathology
PS-06	Digestive Diseases Pathology - GI
PS-07	Digestive Diseases Pathology - Liver/Pancreas
PS-08	Endocrine Pathology
PS-09	Gynaecological Pathology
PS-10	Haematopathology
PS-11	Head & Neck Pathology
PS-12	History of Pathology
PS-13	Infectious Diseases Pathology
PS-14	IT in Pathology
PS-15	Molecular Pathology
PS-16	Nephropathology
PS-17	Neuropathology
PS-18	Ophthalmic Pathology
PS-19	Other Topics
PS-20	Paediatric and Perinatal Pathology
PS-21	Pathology in Favour of Developing Countries
PS-22	Pulmonary Pathology
PS-23	Soft Tissue and Bone Pathology
PS-24	Thymic and Mediastinal Pathology
PS-25	Uropathology

F. Barzaghi, S. Kumar, F. Cananzi, S. Jaillon, M. Valeri, V. Quagliuolo, L. Ruspi, P. Colombo, P.A. Zucali, L. Di Tommaso, L. Terracciano, S. Renne*
*Humanitas University, Pieve Emanuele, Milan, Italy; IRCCS Humanitas Research Hospital, Rozzano, Italy

Background & objectives: VETC is metastatic mechanism that involves vessel remodeling and invasion; endothelial covering might also act as an immune-modulator. To investigate this possibility, we studied the VETC related intratumoural heterogeneity of the immune infiltrate.
Methods: We identified several VETC prevalent sarcomas (n=3 alveolar_soft-part_sarcomas(ASPS), n=2 de-differentiated_liposarcomas(DDLPS), n=2 other high-grade), to regularize the inference we included n=5 renal-cell_carcinomas(RCC). We trained an artificial-neural-network(ANN) to recognize VETC with CD34 immunohistochemistry. With a transformation matrix we assessed leucocytes density (automatically with CD45). We then compared VETC_positive and negative areas using a multilevel-hierarchical probabilistic model controlling for histology and case.
Results: Within the same tumour, the areas with VETC tend to have a higher density of leucocytes with a mean z-score of 0.07 Vs -0.24 in the VETC_negative_areas [with a 89% Compatibility Interval (CI) from -0.47 to 0.67 Vs -0.73 to 0.28 respectively]. This was also true across all the different histotypes: mean z-score in ASPS of VETC_positive_areas was 0.15 compared to -0.14 of VETC_negative_areas [CI (-0.45_0.73) Vs (-0.70_0.39)], in DDLPS VETC_positive_areas was 0.23 compared to -0.37 of VETC_negative_areas [CI (-0.42_0.92) Vs (-1.19_0.18)], and in RCC VETC_positive_areas was 0.17 compared to -0.04 of VETC_negative_areas [CI (-0.32_0.71) Vs (-0.59_0.49)].
Conclusion: VETC_positive_areas had –within the same tumour, the same host-response (patient) and also across different histologies– consistently an higher immune infiltrate. This finding will prompt an accurate characterization that might unravel potential sensitivity to drugs targeting the VETC and modulating the immune infiltrate. More generally, we dissected the tumour microenvironment heterogeneity automating the tasks of image annotation and positive cell detection, an approach that we anticipate to be easily scalable.

OFP-15-002
The impact of level 6 synoptic reporting system on turn-around-times in a surgical pathology laboratory of a tertiary cancer centre
S. Rane*, S. Yadav, A. Shah, B. Narahari, D. Yadav, S. Desai
*Tata Memorial Centre-ACTREC, HBNI, India

Background & objectives: TAT, a critical quality parameter in clinical laboratories, is affected by several pre-analytical, analytical and post-analytical processes. In this work, we highlight the importance and impact of data-driven IT systems, automation of data-recording, report generation processes on TAT.
Methods: We compared the TAT of reports generated in a level-6 synoptic reporting system (SRS) with that of a free-text platform (FTS). In SRS, organ and cancer specific forms were used with entries being made in customised forms with selections entered by pathologists. FTS entries were primarily by typists from paper records made by pathologists.
Results: TAT was calculated as days from sample receiving to report finalization. The median TAT for the FTS and SRS was 11 & 8 days respectively. The proportion of reports finalized within the defined TAT increased from 87% for the FTS to 93% in SRS. The most significant impact was noted in the proportion of reports finalized in 5 days (4% vs 20%), in 8 days (28% vs 50%) and 11 days (50% vs 75%) in FTS vs SRS respectively. Cases requiring decalcification also showed similar results. There was also reduction in number of supplementary reports issued for errors in main reports
Conclusion: The current benefit demonstrated in our work is primarily due to the change in the data-entry processes, automated report generation, reduction in the errors and subsequent time spent in verification and correction of reports. Our work shows the benefit of segregation of data entry processes from report generation processes in addition to reduction of paper-trail due to introduction of an elaborate data-driven reporting platform, enhancing the quality of services provided by a clinical diagnostic laboratory.

OFP-15-003
AP Macroscopy mobile app for female genital macroscopy
F. Mundim*, F. Pereira, A. Mendonca, G. Salome, J. Oliveira, J. Araujo, M.C. Andrade, P. Mundim, A. Pereira
*UNIVAS/UNIFENAS, Brazil

Background & objectives: Due to the high demand, importance, and complexity of services in pathological anatomy, digital technologies have become fundamental for improving quality. According to the present, the objective was to develop an application for macroscopy of the female genital system.
Methods: The study applied in the technological production modality. Contextualized Instructional Design was chosen. The stages of development were: Analysis: literature review in PubMed / MEDLINE, SciELO and LILACS, Brazilian Society of Pathology and College of American Pathologists; Design: content production; Development: selection of tools; Implementation: configuration of tools and construction of download environment; Transition: performance of functionality tests.
Results: AP Macroscopy application presents 54 screens and 55 images, general information related to the macroscopy sector, and information about 11 types of macroscopic procedures of the female genital system. All of these 11 features: a brief introduction. Then, the procedures performed, on the piece/fabric (sections, handling, paintings), and macroscopic descriptions with options (Radio-Buttin) to issue text of the complete macroscopy. Subsequently, information about which sections to be represented will appear and make available two galleries: one with illustrations illustrating the anatomy of the organ and the sections to be performed and the other with photos of the organs and sections from the beginning to the end of the procedure.
Conclusion: The AP Macroscopy application was built and consisted of technological innovation in the macroscopic practice of pathological anatomy laboratories that aims to improve exams and optimize the service, open-collaborative online and shareable, contributing to an accurate microscopic diagnosis and ideal treatment for the patient.

OFP-15-004
Development of CNN-based algorithm for automatic recognition of the layers of the wall of the stomach and colon
I. Mikhailov*, A. Khvostikov, A. Krylov, P. Malkov, N. Danilova, N. Oleynikova
*Department of Pathology, Medical Research and Educational Center, Lomonosov Moscow State University, Russia

Background & objectives: Determination of foci of microinvasion of adenocarcinoma in polyps with low and high grade dysplasia is a rather difficult task, which can be tried to solve with the help of deep learning based methods.
Methods: We use two datasets that are developed for the purpose of whole-slide images (WSI) segmentation and tissue type recognition: NCT-CRC-HE-100K and PATH-DT-MSU. Our PATH-DT-MSU dataset contains 20 H&E WSI of digestive tract tumours with pixel-level annotation of 6 tissue types. We solve the segmentation problem via classification approach, with a simple AlexNet-based CNN trained for patch classification.
Results: The main goal for developing these algorithms is to automatically recognize the layers of the wall of the stomach and colon on WSI, namely the lamina propria, muscularis mucosa, submucosa, own muscle

layer, subserous layer, serous membrane and adjacent areas adipose tissue. Since pixel-wise annotation of typical WSI is too time-consuming, we developed the patch classification model, applying which to overlapping patches results in getting coarse segmentation with reasonable accuracy. To adopt the model trained on NCT-CRC-HE-100K to PATH-DT-MSU we replace the last fully-connected layer and perform fine-tuning. The overall test accuracy of WSI classification is 0.93 on NCT-CRC-HE-100K and 0.8 on PATH-DT-MSU.
Conclusion: Thus, we managed to develop an algorithm that detects layers of gastric mucosa and depth of invasion of intestinal-type gastric tumours with acceptable accuracy. The use of developed post-processing methods of segmentation contour analysis allows to detect depth of invasion in some cases of diffuse-type tumours. Also the next step is to train deep learning algorithms to segment tubular and papillary structures, low and high grade dysplasia, foci of invasive adenocarcinoma.

Funding: This work was supported by RFBR grant 19-57-80014 (BRICS2019-394).

OFP-15-005
The impact of different mounting methods in the quality of whole slide images used for digital diagnosis in pathology
D. Ferreira*, J. Vale, M. Curado, A. Polónia, C. Eloy
*IPATIMUP, Italy

Background & objectives: The quality of digital images depends on the quality of glass slide preparations, namely of the mounting. This study compares glass coverslip, film coverslip, and liquid coverslip methods, to evaluate which is better for diagnosis in a digital pathology workflow.
Methods: Eighteen tissue samples of paraffin-fixed embed tissue processed paraffin blocks were prepared. From each block, three consecutive 3um sections were made and mounted using the three mounting methods. The slides were scanned in 3DHISTECH P1000 scanner, originally calibrated for film coverslip, and evaluated by two experienced pathologists on digital pathology.
Results: The film and liquid coverslip methods have similar results concerning the presence of air bubbles, air drying artifacts, tissue exposed and staining alterations. The glass coverslip method was the one with more air bubbles. The liquid coverslip showed more often alterations on the digital images, but like the other two methods, was found suitable for diagnosis. The liquid coverslip was the one that produced whole-slide images with the lower size.
Conclusion: The tested mounting methods generated glass slide preparations suitable to produce diagnostic quality digital images. The scanner calibration according to the mounting method may interfere with the quality of the digital image. Mounting methodology must be considered when adopting a digital workflow.

OFP-15-006
Implementation of a digital pathology workflow based on WaidX for rapid remote cytology diagnostics
M. Botteghi*, F. Trisolini, A. Paradiso, S. Martinotti, A. Procopio
*Università Politecnica delle Marche, Italy

Background & objectives: The ability to provide early diagnosis of female tumours has a strong impact on survival. Telemedicine is of great utility allowing for worldwide diffusion of good level healthcare practices. WorldConnex developed an integrated model for rapid accurate PAPtest remote diagnostics.
Methods: Women book the PAPtest on a web portal that assigns the collection center. The sample is taken and prepared using CYTOfast+ that produces high quality low-cost thin layer preparations. Slide are digitized, virtual slides are collected providing an AI-assissted pre-diagnostic support. A team of remote cytologists connected via WaidX carry out the diagnosis and send the digital report to patients.
Results: We are validating the platform under a wide range of conditions, including prohibitive settings of resource. The ongoing trial is highlighting the full satisfaction of the involved healthcare professionals. The integrated management chain of biological, digital and remote diagnostics components allows to manage a high quality diagnostic process with a time-to-response of 24 hours.
Conclusion: WaidX is a versatile telemedicine platform born from WorldConnex experience in Digital Health, devoted to provide answers to the huge need of telemedicine diffusion. Our project is characterized by a high level of innovation which increases efficiency and efficacy of healthcare practices and can boost the use of telepathology both in developed and developing countries. Innovative solutions are integrated into each element of the system to improve and optimize diagnostic processes.

OFP-15-007
Mapping the evidence for the WHO Classification of Tumours: a living evidence gap map by tumour type (WCT-EVI-MAP).
S. Armon*, F. Campbell, R. Cierco, I. Cree, I. Indave
*International Agency for Research on Cancer, WHO, France

Background & objectives: Decisions for the WHO-Classification-of-Tumours (WCT) as global reference tool should be informed by best available evidence, minimising risk of incorporating misinformation into clinical decision's pathway. We aim to map the evidence-base of the WCT, identifying gaps and pockets of low-level-evidence.
Methods: The WCT-EVI-MAP project will apply a mixed-method, stepwise approach to adapt Evidence-Gap-Map (EGM) methodology to the WCT. Steps include -development of a framework through expert consultation (e-Delphi study), -retrieving of evidence applying a living approach (continuous search for new evidence), -mapping of evidence in Mega-maps of group of tumour types using EPPIReviewer®, and descriptive analysis of WCT pre-post WCT-EVI-MAP.
Results: The resulting EGMs will describe the body of evidence for single tumour types, by research field and evidence-level in an easy-to-read visual representation. Mega-maps will be combined to provide an open-access online tool with living EGMs of the WCT. Dimensions of the map defined through the first phase of expert consensus will include evidence on epidemiology, molecular pathology, prognosis, as defined in the 5th edition of the WCT and three levels of evidence (low, medium and high) as defined by the current evidence pyramid. A strict multidisciplinary approach will be applied, and the results will be integrated into the strategic planning of the WCT 6th edition.
Conclusion: The WCT-EVI-MAP will represent a ground-breaking advance for the WCT and research in the field, positively impacting cancer diagnosis and management. The online tool will increase the discoverability and use of studies by the WCT decision-makers, research commissioners and stakeholders. Such long-term, positive impact has been already observed in other specialised fields with and constitutes an additional step towards evidence-based pathology.

OFP-15-008
SimInPath: mobile application to assess skills in pathology
E. Alcaraz-Mateos*
*Department of Pathology, Morales Meseguer University Hospital, Spain

Background & objectives: As an academic subject, Pathology is eminently theory based, and is routinely assessed in this fashion. The objective of this project was to design a non-profit application for mobile devices to assess competencies/practical skills in the field of Pathology.
Methods: There was an initial phase of development for the application and a second phase for testing.