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Abstracts

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# Virchows Archiv

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**Mission statement:** To advance the scientific basis of human pathology by the publication (encouragement and dissemination) of high quality research (including molecular and translational studies) and thereby contribute to patient care. Manuscripts of original studies reinforcing the evidence base of modern diagnostic pathology, using immunocytochemical, molecular and ultrastructural techniques, will be welcomed. In addition, papers on critical evaluation of diagnostic criteria but also broadsheets and guidelines with a solid evidence base will be considered. Consideration will also be given to reports of work in other fields relevant to the understanding of human pathology as well as manuscripts on the application of new methods and techniques in pathology. Submission of purely experimental articles is discouraged but manuscripts on experimental work applicable to diagnostic pathology are welcomed. Biomarker studies are welcomed but need to abide by strict rules (e.g. REMARK) of adequate sample size and relevant

marker choice. Single marker studies on limited patient series without validated application will as a rule not be considered. Case reports will only be considered when they provide substantial new information with an impact on understanding disease or diagnostic practice.

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Abstracts

**PS-12-002****Biomechanical properties studying of atherosclerotic aortic wall with micro and macrocalcifications**

R. Moskalenko\*, A. Romaniuk, I.-M. Zakorko, D. Levchenko, M. Lyndin, A. Piddubnyi, V. Sikora

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**Objective:** In the aortic wall calcification occurs as a pattern of micro and macrocalcification changing significantly aortic wall biomechanical properties. The aim of the work is biomechanical properties studying of aortic wall in the conditions of macro and microcalcification.

**Method:** 18 atherosclerotic aorta tissue samples with histologically verified different calcification patterns were studied. The samples were divided into 3 groups: control - without calcification manifestation (6), with microcalcification - calcium deposits to 4.99 mm (6), macrocalcification - calcifications <5 mm (6). Hydrostatic test stand was to study tissue samples strength, using the principle of equal distribution of pressure and its gradual increase on the sample surface. The experimental stand consists of metal container, filled with liquid under pressure of 5–8 bar, pressure conduit, a regulating valve, model manometer (accuracy class 0.4) and test chamber with fastening mechanisms of aorta samples. Moments of aortic wall rupture and the manometer index were fixed on the camera.

**Results:** For the control group pressure of aorta wall rupture was  $389,19 \pm 60,11$  kPa. For aorta with microcalcifications rupture pressure was  $128,63 \pm 25,34$  kPa, at the same time, the aorta with macrocalcification patterns rupture pressure was  $344,0 \pm 35,88$  kPa.

**Conclusion:** Aorta samples with macrocalcifications are significantly more stable to hydrodynamic pressure, than aorta with microcalcifications ( $p < 0.01$ ). Moreover, the resistance to pressure in the case of macrocalcifications is not significantly different from the control group ( $p > 0.05$ ).

**PS-12-003****Histopathologic patterns of pericardial and pleural metastases and their clinicopathological correlations**

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**Objective:** The aim is to compare the histopathologic patterns of metastases involving pleural and pericardial tissues

**Method:** 145 specimens (75 pericardial and 70 pleural biopsies) were analyzed for the following patterns: (a) tumour cells floating into cavity without invasion of underlying tissue, (b) emboli, without invasion of underlying tissue or (c) invasive pattern, defined as neoplastic cells infiltrating into underlying tissue

**Results:** The invasive pattern of metastasis was mostly observed in pleural tissues (95, 7 %), whereas most pericardial metastases presented as tumour cells floating in the cavity or as lymphatic emboli (58, 6 %,  $p < 0.0001$ ). The pattern of metastasis showed no correlation with the time to metastasis, the origin or the histologic type of the primary tumour. Breast cancer gave metastases more often in pleura, than in pericardium ( $p < 0.0001$ ). Time to metastasis differed significantly ( $p = 0.02$ ) in pleural (median 26.6 months) and pericardial (76 months) metastases as well as in comparison with primary tumour's origin ( $p < 0.005$ ), as lung tumour gave metastases after 8.6 months, whereas breast tumour after 108.3 months.

**Conclusion:** Pericardial metastases in comparison to pleural ones present more often with floating tumour cells or emboli rather than invasive foci, a feature not associated with other clinicohistological characteristics, indicating an organ (pleura -pericardium) specific feature.

**PS-12-004****Infarct-like medial necrosis: A role for ischemia in ascending aorta aneurysms**

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**Objective:** The aim of this study is to evaluate the incidence and the relationship with other conditions of medial cell band-like necrosis resembling infarct—which appears in dissections and is considered a consequence of the cleavage - in ascending aorta aneurysms (AscAA), without cleavage.

**Method:** Slides and clinical files of 275 surgical specimens of patients with AscAA without dissection or previous aortic surgery were reviewed. Groups with or without infarct-like necrosis were compared by chi-square or t test; significance was established as  $P \leq 0.05$ .

**Results:** There were 47 cases with infarct-like necrosis. The variables with significant differences were: age (66.5 years in patients with vs 57.4 years in patients without infarct-like necrosis), atherosclerosis (53.2 % vs 28.9 %), inflammation (61.7 % vs 34.6 %), vasa vasorum alterations (66.0 % vs 50.0 %), systemic arterial hypertension (SAH - 85.1 % vs 68.4 %), and chronic renal dysfunction (19.1 % vs 7.5 %). No significant difference was detected regarding sex, adventitial fibrosis, Marfan syndrome, bicuspid aortic valve, smoking habit, diabetes, dyslipemia, ischemic heart disease, hypothyroidism, valve dysfunction, and serological tests for syphilis.

**Conclusion:** Ischemic infarct-like necrosis is found in 17.0 % of cases of AscAA, and may play a role in its pathogenesis. It is related to SAH, chronic renal failure, atherosclerosis and signs of inflammation.

**PS-12-005****Lymphangiogenesis is increased in aortitis and may reveal susceptibility for dissection**

I. Kholova\*, E. Niimimäki, A. Mennander, T. Paavonen

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**Objective:** Inflammation-associated lymphangiogenesis (IAL) is associated with various inflammatory states prone for rupture. The outer layer of the aortic wall is susceptible for dissection. Sparse data exist on lymphatics during aortitis and other aorta pathologies. The aim of the study was to delineate whether IAL impacts on the ascending aorta during inflammation.

**Method:** Surgically resected ascending aortas including 8 aortitis, 6 dissection, 7 atherosclerotic aortas, 5 severe degeneration without dissection and 4 autopsy controls were investigated. Lymphatics were detected by podoplanin antibody immunohistochemistry and morphometric analysis was performed with aim to evaluate both lymphatic density and lymphatic mean diameter.

**Results:** The lymphatic density of aortitis was increased ( $p = 0.037$ ) as compared with dissection, atherosclerotic aortas, severe degeneration and autopsy controls.

**Conclusion:** Inflammation-associated lymphangiogenesis is increased in aortitis as compared with aortas without inflammation. The locality of IAL may predict susceptibility for dissection.

**PS-12-006****The diagnostic efficacy of cardiac scintigraphy with <sup>99m</sup>Tc-labeled pyrophosphate for identifying cardiac transthyretin-related amyloidosis: The comparative clinico-morphological study of heart**

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**Objective:** to demonstrate of the diagnostic efficacy of cardiac scintigraphy with <sup>99m</sup>Tc-labeled pyrophosphate (<sup>99m</sup>Tc-PYP) for identifying cardiac transthyretin-related amyloidosis (ATTR).