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RESEARCH AREA

Over the past decades, my scientific work has focused on the interaction between inflammatory processes and the vascular system. We have employed invasive and non-invasive, predominantly ultrasound-based techniques to perform detailed morphological and functional assessments of the vasculature. The arterial studies aimed to evaluate arterial wall stiffness under resting and provoked conditions, with particular emphasis on the relationship between vascular elasticity and peripheral vascular resistance. Endothelial functions were tested on both macrovascular and microvascular levels.

Recently, my research interest has shifted to the venous and pulmonary arterial system, with a particular focus on the functional role of the right heart in inflammatory and venous thromboembolic diseases. Our current aim is to develop laboratory and functional biomarkers that may contribute to a more effective diagnosis of pulmonary embolism and support the severity and prognosis grading of the disease.

TECHNIQUES AVAILABLE IN THE LAB

Echocardiographic assessments for detailed evaluation of the right heart, including measurements of arterio-ventricular coupling.

Measurement of arterial pulse wave velocity using Doppler ultrasound, assessment of distensibility parameters, and evaluation of endothelial function via post-occlusive reactive hyperemia testing in the brachial artery.

Microcirculation assessments using capillary microscopy and laser Doppler, performed at rest and during provocation tests.

Invasive arterial and venous pressure measurements, from catheter insertion to data acquisition. Right heart catheterization using a Swan-Ganz catheter and comprehensive hemodynamic evaluations.

SELECTED PUBLICATIONS

Végh, E., **Kerekes, G.**, Karancsiné Pusztai, A., Hamar, A., Szamosi, S., Váncsa, A., Bodoki, L., Pogácsás, L., Balázs, F., Hódosi, K., Domján, A., Szántó, S., Nagy, Z., Szekanecz, Z., Szűcs, G. (2020) Effects of 1-year anti-TNF- α therapy on vascular function in rheumatoid arthritis and ankylosing spondylitis. **Rheumatol Int** 40: 427-436.

Dávida, L., Pongrácz, V., Mohamed, E., Szamosi, S., Szűcs, G., Váncsa, A., Tímár, O., Csiki, Z., Végh, E., Soltész, P., Szekanecz, Z., **Kerekes, G.** (2020) A prospective, longitudinal monocentric study on laser Doppler imaging of microcirculation: comparison with macrovascular pathophysiology and effect of adalimumab treatment in early rheumatoid arthritis. **Rheumatol Int** 40: 415-424.

Obajed Al-Ali, N., Tóth, S., Váróczy, L., Pinczés, L., Soltész, P., Szekanecz, Z., **Kerekes, G.** (2023) One step back from bedside to the bench - How do different arterial stiffness parameters behave in relation to peripheral resistance? **Diagnostics** 13: 2897.

Drosos, G., Vedder, D., Houben, E., Boekel, L., Atzeni, F., Badreh, S., Boumpas, D., Brodin, N., Bruce, I., Gonzalez-Gay, M., Jacobsen, S., **Kerekes, G.**, Marchiori, F., Mukhtyar, C., Ramos-Casals, M., Sattar, N., Schreiber, K., Sciascia, S., Svenungsson, E., Szekanecz, Z., Tausche, A., Tyndall, A., van Halm, V., Voskuyl, A., Macfarlane, G., Ward, M., Nurmohamed, M., Tektonidou, M. (2022) EULAR recommendations for cardiovascular risk management in rheumatic and musculoskeletal diseases, including systemic lupus erythematosus and antiphospholipid syndrome. **Ann Rheum Dis** 81: 768-779.

Kerekes, G., Czókolyová, M., Hamar, A., Pusztai, A., Tajti, G., Katkó, M., Végh, E., Pethő, Z., Bodnár, N., Horváth, Á., Soós, B., Szamosi, S., Hascsi, Z., Harangi, M., Hódosi, K., Panyi, G., Seres, T., Szűcs, G., Szekanecz, Z. (2023) Effects of 1-year tofacitinib therapy on angiogenic biomarkers in rheumatoid arthritis. **Rheumatology (Oxford)** 62: SI304-SI312.