

Research Project

Name of Institution and department: University Clinical Centre of Serbia

Link to website: <http://www.kcs.ac.rs/>

City and Country of Institution: Belgrade, Serbia

RESEARCH GROUP

Our research group consists of a young team of radiology specialists and sub-specialists with special interest in digestive, vascular and interventional radiology, all engaged in clinical and scientific work, as a part of their PhD studies. We are a young, growing group of enthusiastic colleagues willing to use the privilege of working in an environment in which we are able to easily connect with other clinical branches and give a multidisciplinary approach in our daily practice and science. We are willing to share our knowledge and improve together, and we would be proud if we had an opportunity to help someone in their professional development.

TITLE OF PROPOSED RESEARCH PROJECT

Role of Ultrasound in the Characterisation of Emergency Peritoneal Pathology

OBJECTIVES

- To systematically evaluate and establish the diagnostic performance, speed, and accuracy of advanced multi-parametric ultrasonography as a primary diagnostic tool for differentiating acute, life-threatening peritoneal and visceral pathologies in patients presenting with an acute abdomen
- To quantitatively evaluate the presence of free intraperitoneal fluid and qualitatively categorize its acoustic properties—distinguishing between anechoic simple transudates and particulate, complex echogenic patterns indicative of hemoperitoneum, purulent peritonitis, or complex exudates
- To evaluate sensitivity and specificity of ultrasound in detection and characterisation of omental infarction, mesenteric panniculitis, epiploic appendagitis, acute omentitis.
- To optimize ultrasound scanning protocols (such as the evaluation of the Enhanced Peritoneal Stripe Sign [EPSS] and the shifting phenomenon) for the rapid, bedside detection of micro-pneumoperitoneum resulting from hollow viscus perforation
- To utilize Color and Power Doppler alongside advanced gray-scale imaging to evaluate bowel-wall lamellation, wall-mural thickening, and mesenteric fat changes ("creeping fat") to identify early signs of bowel ischemia, inflammation, or mechanical strangulation
- To refine point-of-care ultrasound (POCUS) frameworks for multi-variable abdominal emergencies, bridging the gap between initial bedside presentation and definitive emergency surgical or interventional radiological workflows

APPLICANT'S DUTIES

The applicant will be deeply integrated into the clinical, academic, and administrative operations of the emergency department and urgent radiology unit. The designated responsibilities include:

- Analyzing the accumulated study data to draft peer-reviewed scientific manuscripts for high-impact radiological/surgical journals and preparing research abstracts for upcoming international congresses.
- Clinical Screening and Ultrasound Execution: Concurrently screening incoming emergency department patients presenting with acute abdominal pain
- Methodically recording prospective data sheets detailing sonographic parameters (e.g., fluid volume, echogenicity, bowel wall thickness, presence of ring-down artifacts, and Doppler vascularity index) alongside corresponding clinical findings.
- Cross-referencing ultrasound findings directly with subsequent contrast-enhanced computed tomography (CT) scans, surgical exploration findings, and histopathological reports to calculate true sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV)

APPLICANT'S BENEFITS

This research position offers an expansive environment for professional and academic maturation. The selected applicant will secure the following clear institutional and career advantages:

- Advanced Clinical Competence: Mastery of multi-parametric, advanced emergency ultrasound applications including contrast-enhanced ultrasound (CEUS) concepts, modern bowel sonography, and complex interventional/emergency protocols in high-stress, time-sensitive environments.
 - Peer-Reviewed Publications: Gaining co-authorship and primary-investigator status on high-quality, clinical evidence-based papers exploring the integration of ultrasound with emergent surgical decision-making
 - International Network & Collaboration Growth: Building direct collaborative channels with international surgical and radiological working groups, positioning the applicant as a competitive delegate and session moderator for prominent European and regional medical congresses.
-
- Project Leader: Dragan Vasin
 - Members: Sanela Hasanagić, Jelica Vukmirović, Ksenija Mijović, Bojana Mladenović, Miona Jevtović