Doctoral Dissertation

Tal Martin Hörer  Early detection of major surgical postoperative complications evaluated by microdialysis

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Tal Martin Hörer
Medical Science with focus on Surgery

Tal Hörer was born in Haifa, Israel in 1971 and received his M.D from Semmelweis University in Budapest, Hungary in 2001. His surgical education started 2002 at Kalix Regional Hospital in the north of Sweden and he has worked in both general surgery and vascular surgery in Israel. His surgical training at Örebro University Hospital started in 2005, where he became a specialist in general surgery in 2009. Since 2009 Tal has been working in the Vascular Unit (Department of Surgery and later the Cardio-Thoracic and Vascular division) and he has spent some time in fellowships in Israel and Brazil. He joined Professor Lars Norgren’s Research Group and under the tutorship of Associate Professor Kjell Jansson his scientific focus has been on the need for early detection of postoperative complications after major abdominal and vascular surgery.

Postoperative major complications after abdominal surgery continue to be of great concern as many patients are affected, especially those with other co-morbidities as diabetes and obesity. Major complications are associated with high morbidity and mortality rates. There are no specific markers for complications after surgery and early diagnosis remains a great challenge. Free floating catheter intraperitoneal microdialysis (IPM) is a minimally-invasive method that measures metabolites intra-abdominally with the ability to detect early changes.

The aim of this thesis was to investigate the role of carbohydrate and fat metabolites in patients with major postoperative complications, utilizing IPM. We found that the method can be used also for diabetic and obese patients and that IPM lactate/pyruvate (l/p) ratio and glycerol levels differ in patients developing complications in the first 48 postoperative hours. We investigated changes of these metabolites in patients operated on for ruptured abdominal aortic aneurysms and found that IPM l/p ratio and glycerol levels were higher in patients developing intra-abdominal hypertension with organ failure. We conducted an animal study in order to understand the mechanism behind these findings, which supports our clinical results.

IPM seems to be useful in the early detection of severe postoperative complications, enabling early intervention to reduce patients’ suffering, morbidity and mortality.