



## ROLE OF MICRO-PET IN ASSESSMENT OF HYPOXIA AND PROGRESSION OF SEVERE ACUTE PANCREATITIS.

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Acute pancreatitis is a life threatening illness and in approximately 15% of patients will develop severe necrosis of the pancreas. Much of the pathology of pancreatitis is thought to be related to microcirculatory derangements and systemic inflammatory response syndrome. One of the characteristic features of severe necrotizing pancreatitis is the development of regions of significant hypoxia within the pancreas. Identification of early hypoxia may enable pre-emptive prediction of severity. Recent advances have resulted in the development of markers of hypoxia which enable in vivo mapping of hypoxic regions within tissues and organs. This study investigates the use of 18F-MISO PET scanning as a

predictor of severity in an animal model of severe acute pancreatitis. 1mm axial slices will be taken by combined micro-PET and computerised tomography (CT). The correlation between 18F-MISO and the hypoxia marker PIMO, together with optimisation of hypoxia protocols in acute pancreatitis will be performed.

### Techniques:

Animal model of Pancreatitis  
Histopathology  
Light microscopy  
3D Imaging  
PET  
CT scanning

### Projects

1. Evaluation of micro PET as an imaging tool for severe acute pancreatitis in a rat model.
2. Assessment of pancreatic hypoxia using 18F-MISO PET in severe acute pancreatitis.
3. Immunohistochemical correlation of sensitivity of 18F-MISO PET in severe acute pancreatitis

### Publications:

Cuthbertson C, Christophi C. Disturbances of the Microcirculation in Acute Pancreatitis. *British Journal of Surgery*, 93(5):518-530, May 2006.

Cuthbertson C, Christophi C. The Potential Effects of Hyperbaric Oxygen Therapy in Acute Pancreatitis. *ANZ Journal of Surgery*, 76(7):625-630, Jul 2006.

Su K, Christophi C. Experimental Animal Models of Acute Pancreatitis. *HPB*, 8, (4): 264 – 286, 2006.

Mehrdad Nikfarjam, Christine Cuthbertson, Caterina Malcontenti-Wilson, Vijayaragavan Muralidharan, Ian Millar, Christopher Christophi. Hyperbaric Oxygen Therapy reduces severity and improves survival in severe acute pancreatitis. *J Gastrointestinal Surgery*, 11(8): 1008-15. Aug, 2007.