JOINT RADIOLOGY AND BSG ENDOSCOPY SECTION SYMPOSIUM: 'All you need to know about bariatrics'

OC-062 TOWARDS DETECTING THE 'ADHESIVE COCOON' OF ENCAPSULATING PERITONEAL SCLEROSIS (EPS) BY CINE-MRI: A PILOT STUDY

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Introduction Peritoneal dialysis (PD) is the preferred method for long-term management of patients with end-stage renal failure. Over time, peritoneal fibrosis leads to dysfunction and in some to encapsulating peritoneal sclerosis (EPS). This is characterised by a diffuse visceral film forming a tightening cocoon, which ultimately 'strangles' its contents. The patients present with bowel obstruction leading to eventual small intestinal failure, ischaemia and infarction. Surgery can be curative. There is no reliable method for early detection. Recent novel developments based on an MR image analysis method have permitted detection of adhesions from Crohn's disease and surgery, which typically are focal or multifocal. EPS, being adhesions forming a 'cocoon', is also likely to disrupt movement but with a different pattern. We hypothesised it may be detectable with our system. This pilot is a proof-of-principle investigation. MR video-loop of abdominal examination in health shows remarkably smooth movement. Traditional MRI concentrates on structure; by focusing on movement instead we noticed disruption due to Crohn's and surgical adhesions.

Methods The Sheffield Image Registration Toolkit was used to develop software for more rapid review. Images are acquired at different stages in the respiratory cycle; registration links each point in an image to its corresponding point in another. Data are displayed as vectors and contours. In an earlier study standard dynamic non-contrast MR images were obtained from healthy volunteers; the movement pattern could be classified as 'smooth' (normal) or 'disrupted' (perhaps indicating adhesions). Three patients switched from PD to haemodialysis awaiting surgery with suspected EPS were also investigated.

Results Surgical findings confirmed EPS. 18 volunteers were studied; representative processed sagittal images from 2 volunteers and 2 patients are shown. There is a striking difference in movement pattern. In health movement is marked in the upper abdomen but still very noticeable in the lower part. In EPS movement is restricted to the upper abdomen. This is shown by the distribution of the red contours which signify maximum movement (and blue the least).

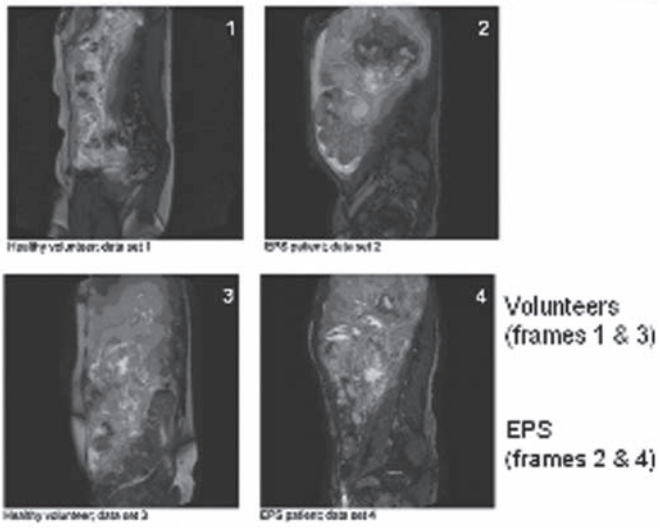

Figure 1 OC-062

Conclusion This pilot study suggests dynamic cine-MRI coupled with advanced image analysis of movement can detect disruption due to an EPS cocoon. The method offers an approach in PD patients for early detection of disordered abdominal movement, signifying potential dialysis failure.

Competing interests None.

Keywords adhesions, cine-MRI, encapsulating peritoneal sclerosis.