(016) DIAGNOSING COLONIC DYSMOTILITY IN CHRONIC CONSTIPATION OF CHILDHOOD

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Background: Over the last decade, Nuclear Transit Studies (NTS) have become an invaluable tool for characterizing types of colonic transit abnormalities found in intractable constipation. We have employed the technique to diagnose normal, rapid and slow transit and demonstrate sites of holdup, as well as monitoring the results of therapeutic interventions in children with colonic dysmotility.

Method: After standardized patient preparation, a radio-labelled oral liquid meal (¹⁴C-galactose) is administered followed by a gastric emptying study and delayed imaging at 6hrs, 24hrs, 30hrs and 48hrs. Quantification and calculation of "geometric centres" permits a visual presentation of transit patterns.

Results: Since 1996, more than 800 NTS have been undertaken in over 650 subjects. Five patterns of transit have been recognized:

1. Normal transit with ano-rectal retention (NT/ARR)
2. Rapid transit with ano-rectal retention (RT/ARR)
3. Slow Transit Constipation (STC)
4. Focal holdup
5. Normal transit (no evidence of dysmotility)

NT/ARR is treated by local methods (laxatives, enemas etc). ARR is commonly associated with food intolerance/allergy, which frequently responds to dietary intervention. In our population approximately half of all presentations were STC. Transcutaneous electrical stimulation (TES), was introduced to treat STC in 2006. Since then, 79 repeat studies have been performed to monitor the effect of TES in STC children, with documented improvement in 70/79.

Conclusion: NTS is a useful technique for the diagnosis and monitoring of colonic dysmotility in children with chronic constipation. It provides objective, reproducible and quantifiable data, which has been successfully used to monitor disease progression and responses to therapy.
(P11) FALSE POSITIVE VENTILATION/PERFUSION LUNG SPECT – A SINGLE CENTRE EXPERIENCE

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Context: V/Q Lung SPECT is very sensitive and specific for the diagnosis of pulmonary embolism (PE). In the revised EANM guidelines, PE is advised to be reported as present if ventilation/perfusion (V/P) mismatch is of at least one segment or two sub-segments that conform to the pulmonary vascular anatomy. At the John Hunter and Calvary Mater Hospitals, Newcastle NSW, we have been performing the SPECT studies as a routine since March 2010. Planar studies are only performed if patient condition warrants or preferred by a physician.

Objectives: Between March 2010 and Jan 2011, 467 V/Q studies were performed. Since the data supporting a single mismatched perfusion defect as PE, was not sufficient, a single mismatched perfusion defect was considered to be intermediate/indeterminate for PE and further evaluation with CTPA was recommended. We identified eight studies (representing 1.7% of all V/Q studies performed) which, if EANM guidelines were strictly followed would have been reported as positive but were not related to this aetiology.

Conclusion: Single mismatched perfusion defects on SPECT are not always diagnostic for pulmonary embolism and caution is recommended. Value of further perfusion co-registered CT in these case needs to be investigated.

(P12) A STANDARDISED TECHNIQUE FOR GASTRO-INTESTINAL TRANSIT IN PAEDIATRIC POPULATIONS

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Background: Chronic constipation is a common problem in childhood. Since 1998 we have undertaken more than 900 individual paediatric Gastro-Intestinal Transit (GIT) studies employing standardised radio-labelled meals. Gastric Emptying, Small Bowel Transit and Colonic Transit can be readily characterised, with information provided to the referring clinician(s) in an easily understood format.

Objectives: The technique relies on the quantification of radioactivity in separate compartments of the GIT – stomach, small bowel, ascending colon, transverse colon, descending colon, recto-sigmoid colon and evacuated activity. “Geometric Centres (GC) of activity” are calculated at various times over 3 days, and plotted on a simple graph. Subsequent studies can be plotted to compare results to previous studies, in relation to normal limits (see below).

Objectives: The aim of this presentation is to document a technique that has been developed after much experimentation, and to demonstrate some of the pitfalls to be avoided in its implementation. There has been increasing Australian and worldwide interest in a shift to Nuclear Medicine techniques from other methods for assessment of Gastrointestinal Transit, and adoption of a simple standardised format would be of considerable benefit to the Nuclear Medicine community.