Game Changers

ULTRASOUND AS A DISEASE ASSESSMENT TOOL FOR INFLAMMATORY POLYARTHROPATHY

Dr. Stephen McDonald & Dr. Stephanie Walker
Craigavon Area Hospital, Portadown, BT63 5QQ

The evolution of musculoskeletal ultrasound as a tool in the daily practice of the rheumatologist has been astounding. Its benefits include relative lack of expense and the capability to carry out dynamic joint assessment [1]. Whereas plain radiographs demonstrate established bony damage, ultrasound can highlight ongoing synovial inflammation, non-radiographic bony erosion and soft tissue pathology. This has augmented the assessment of inflammatory polyarthropathies and aided in clinical decision-making.

Whilst limitations in intra-operator variability and reproducibility have been cited, education through both practical and on-line musculoskeletal ultrasound courses is helping to address these caveats[2]. With tailored standardised training, incorporated into the rheumatology curriculum, confidence in point of care scanning will increase.

What does this mean for the future? Working groups such as the OMERACT ultrasound group are evaluating its role as an outcome measure[3]. Issues remain in cases where there is clinical disease remission but ongoing ultrasonographic evidence of active synovitis. Ultrasound based synovitis has been suggested to predict radiographic damage. Will this mean the need to escalate treatment in a case of clinical remission? Furthermore, will outcome measures such as the DAS28 joint score require enhancement or even replacement with ultrasound based scores? Some clinical trial data to date has shown no significant difference at primary outcome points but this is in need of further evaluation[4]. We guess time will tell.

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TRANSFUSION FOR ACUTE UPPER GASTROINTESTINAL BLEEDING – IS LESS BETTER THAN MORE?

Dr. Andrew Spence & Dr. Tony Tham
Ulster Hospital, Dundonald, Belfast, BT16 1RH

Acute upper gastrointestinal bleeding (UGIB) is a common presentation to emergency departments and is associated with significant morbidity and mortality (5-10%). While blood transfusion may be part of the management, the most effective red cell transfusion strategy is debatable.

A 6-year European prospective randomised trial of 889 patients presenting with upper GI bleeding showed a restrictive transfusion strategy was associated with significantly better outcomes when compared to liberal transfusion. Outcomes, including rebleeding (10% v 16%) and adverse events (40% v 48%), were significantly better with a transfusion haemoglobin (Hb) threshold of 7g/dL when compared to 9g/dL. Survival was also improved in peptic ulcer and cirrhotic Child-Pugh A & B patients.[1]

In addition to UGIB, a meta-analysis has shown in patients with a critical illness and a GI bleed, that cardiac events, infections and overall mortality are reduced when a restrictive blood transfusion approach is implemented.[2]

A restrictive transfusion strategy should be considered in the management of patients with acute UGIB. We suggest transfusing only when Hb is less than 7 g/dL, and aiming for a target of 7 – 9 g/dl. The exception when Hb threshold for transfusion may be higher may be the haemodynamically unstable patient and those with recent symptomatic cardiovascular disease. The ongoing TRIGGER trial will assess the feasibility of implementing a restrictive vs liberal red blood cell transfusion policy for adult patients with UGIB in the UK.

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MATRIX-ASSISTED LASER DESORPTION/ IONIZATION- TIME OF FLIGHT (MALDI-TOF) SPEEDS UP CLINICAL MICROBIOLOGY

Prof. John E. Moore & Dr. B. Cherie Millar
Belfast City Hospital, Lisburn Rd, Belfast, BT9 7AD

There's a saying in medicine that sums up traditional clinical microbiology:

> *The physician knows everything and does nothing.*
> *The surgeon knows nothing and does everything.*
> *The psychiatrist knows nothing and does nothing.*
> *The microbiologist knows everything, but tells you a week later.*

Historically, clinical microbiology has been wedded to conventional culture techniques, which have not fundamentally changed since the days of Koch and Pasteur. Turnaround times of microbiological cultures have been aided somewhat with the arrival of the digital age, but "digitalisation" has not radically altered turnaround times nor the microbiologist's attempt to culture pathogenic

bacteria from clinical specimens *in vitro*, for isolation and identification purposes.

That's all about to change. The arrival and adoption of matrix-assisted laser desorption/ionization - Time of flight (MALDI-TOF) is a technology that will revolutionise the identification of bacterial and fungal pathogens within service level clinical microbiology, in a way that molecular (PCR) methods never managed. This technique works by allowing software to match spectral profiles of bacteria, which are generated by bombarding the bacterial culture with a laser, resulting in the sublimation and ionisation of the bacteria. Resulting ions are separated as determined by their mass-to-charge ratio on exit of a time-of-flight tube. In practical terms, the instrument can identify several hundred bacterial/fungal isolates simultaneously in less than 20 minutes and is relatively cheap to run.

To date in Northern Ireland, Antrim Area Hospital and Belfast Trust hospitals are employing MALDI-TOF technology. Adoption of MALDI-TOF technology will help speed up time to result in clinical microbiology laboratories and go some way in debunking the traditional view of the slowness of this pathology discipline.

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