Dear ANZSRS Webmasters,

At this years' TSANZSRS Annual Scientific Meeting I was awarded best oral presentation for my work titled *"Comparing intra-breath oscillometry and MBW in children with CF".* A summary of my presentation is provided below.

Data from large cohort studies suggests that pulmonary infection, inflammation and structural changes can be present in patients as young as 3 months and often in the absence of clinical symptoms. A limitation to early disease detection has been the lack of feasible and sensitive measures suitable for use in young patients. The multiple breath washout (MBW) is an attractive technique in this cohort as it is able to detect early changes in the peripheral airways far sooner and with more sensitivity that conventional lung function techniques. However, it is not routinely performed as it often requires lengthy testing sessions, availability of multiple staff, and specialised setups to improve success rates. Intra-breath oscillometry (IB-OSC) is a modified version of conventional OSC which tracks pressure changes within the lungs during the breathing cycle. Studies involving CF patients, have shown OSC can distinguish abnormal lung function with increased resistance and decreased (more negative) reactance values. This technique is highly feasible in young children with data collection occurring during 20 second periods of quiet, tidal breathing.

As both techniques are influenced by the same physiological principles our aim was to examine whether measures of resistance and reactance (measured by IB-OSC) reflect ventilation inhomogeneity (measured by MBW). OSC and MBW measurements were performed on 63 children enrolled in the ELO study at QCH as part of their annual review process. MBW results were classified as normal or abnormal based on LCI value of 7.9 and IB-OSC reactance results were classified as normal or abnormal based on the difference between end expiration and end-inspiration being greater than -0.54hPa.s.L-1. Abnormal LCI values (LCI >7.9) were found in 33 patients. Children with abnormal LCI results had decreased (more negative) Xrs variables when compared to children with normal LCI (statistically significant). We identified13 participants with abnormal results measured by both techniques. The agreement between the two techniques as measured by Cohen's kappa was 0.254, which indicates fair agreement.

These preliminary results suggest that IB-OSC Xrs variables may reflect ventilation inhomogeneity. More negative reactance results were seen in patients with abnormal LCI compared to those with normal LCI. The increased feasibility of IB-OSC over MBW in younger patients with CF may allow us to better detect and monitor early changes to lung function. Continued work is warranted to explore the clinical potential of IB-OSC including increasing our sample size, collection of longitudinal data, development of clinically meaningful cut points, and also exploring correlations between clinical status and medication use.

Thank you for the opportunity to present this work.
Kind regards,
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