

Results Among the 54 pleural TB cases, mean age was 46 years with 68% male. Unilateral disease was detected in 96%. 15/54 underwent DT only, 28 underwent DT+LAT and 11 underwent LAT only. Pleural fluid cytology was lymphocytic in 43%. Pleural fluid culture yielded a diagnosis in (7/43) 16% which was low in comparison to LAT pleural biopsy culture yield 21/39 (54%). LAT pleural biopsy yielded a histological TB diagnosis in 37/39 (95%). Pleural fluid GX MTB/RIF Ultra where performed was more sensitive than GX MTB/RIF in both pleural fluid (64% vs 0%) and pleural biopsy (33% vs 25%).

Conclusion LAT plays an important role in the diagnosis of pleural TB. However, pleural fluid Xpert MTB/RIF Ultra demonstrates potential for added diagnostic value. Further studies are required.

What goes down, must come up: oscillation, obstruction and lung physiology

S42 CORRELATION OF MEASUREMENT OF SMALL AIRWAYS INDICES IN A POPULATION OF FIREFIGHTERS

J Feary, T Kabir, S Schofield, P Cullinan. London, UK

10.1136/thorax-2021-BTSAbstracts.48

Background Small airways damage is a plausible response to fire smoke inhalation. In the UK, periodic respiratory health surveillance is carried out using spirometry. Previous studies have suggested the use of impulse oscillometry (IOS) may identify small airways dysfunction in firefighters even in the context of normal spirometry values and it is hypothesised that this may predict future development of asthma or COPD. **Methods** We measured pre and post-bronchodilator spirometry and IOS using ERS/ATS guidelines on the first 203 individuals recruited to a cohort study of firefighters (Grenfell Firefighter Study). We defined significant bronchodilator response as an improvement in forced expiratory volume in one second (FEV1) of 12% and 200mls following administration of inhaled bronchodilator. We also collected information on smoking and self-reported breathlessness using the Dyspnoea-12 questionnaire (maximum score of 36) and explored correlations between different measurements of small airways function.

Results The majority of individuals were male, with a mean age of 45 years; 140 (69%) had never smoked and 12 (6%) had a more than 20 pack year history of smoking. Overall, 32 (16%) had a history of asthma (ever), 15 (8%) had evidence of significant bronchodilator reversibility and 3 (2%) were taking asthma treatment. The majority (73%) reported no breathless (Dyspnoea-12 score of zero). The mean percentage predicted pre-bronchodilator FEV1, forced vital capacity (FVC) and forced expiratory flow at 25–75% of FVC (FEF25–75) were 98%, 102% and 92% respectively using GLI reference equations. The correlation between FEF25–75 and frequency dependence of resistance (R5-R20) was -0.22 (-0.35 to -0.08).

Conclusion We have measured high quality lung function on over 200 firefighters. Further work will be carried out on a larger population of firefighters to explore correlations between spirometry and other measures of small airways indices obtained using IOS to determine if small airways

Abstract S42 Table 1 Demographics, respiratory symptoms and lung function

Variable n (%)	Pre bronchodilator	Post bronchodilator
N	203	
Male	194 (95.6)	-
Age (mean (SD))	45.2 (7.5)	-
Ethnicity (white)	183 (90.2)	-
Duration of employment as firefighter (y)	19.2 (7.2)	-
Smoking history		-
Ex	54 (26.6)	
Current	9 (4.4)	
Body Mass Index (mean (SD))	28.2 (3.79)	-
Diagnosis of asthma (ever)	32 (15.8)	-
Taking current treatment for asthma	3 (1.5)	-
Dyspnoea-12 score		
0	148 (72.9)	
1-12	50 (24.6)	
13-36	5 (2.5)	
FEV1 L	3.99 (0.58)	4.15 (0.60)*
% predicted (mean (SD))	97.8 (11.1)	101.8 (10.6)*
FVC L	5.22 (0.80)	5.22 (0.80)*
% predicted (mean (SD))	101.8 (11.3)	101.9 (11.3)*
FEF25-75 L/min	3.5 (1.0)**	4.1 (1.0)***
% predicted	92.0 (25.4)**	106.3 (25.6)***
R5	0.34 (0.09)	0.30 (0.08)
R20	0.30 (0.06)	0.27 (0.05)
R5-20	0.04 (0.05)	0.03 (0.04)
AX	0.18 (0.11, 0.35)	0.13 (0.07, 0.24)
FRes	10.5 (8.5, 13.9)	9.54 (7.89, 12.38)

* n=197; **n=200; *** n=196

abnormalities are associated with age, sex, smoking and the presence of asthma or self-reported breathlessness. In the future, IOS may prove a useful tool to measure response to occupational fire smoke inhalation.

S43 REPEATABILITY OF IMPULSE OSCILLOMETRY IN PATIENTS WITH SEVERE ASTHMA

R Chan, BJ Lipworth. Scottish Centre for Respiratory Research, Dundee, UK

10.1136/thorax-2021-BTSAbstracts.49

Introduction Impulse oscillometry (IOS) has advantages over spirometry especially where accurate forced volumetric measurements may be difficult. The coefficient of variation (CV) is commonly used as a measure of precision and repeatability and can also be utilised to assess variability between different devices that perform similar tasks irrespective of units of measurement. Biological variability (BV), a measurement of natural fluctuation, is calculated as the within subject one sided 97.5% CI. Its value can be used as a surrogate for the minimal change that must be exceeded for a clinically significant treatment effect to occur.

Aim To assess the medium term within subject CVs and BVs for IOS (Jaeger Masterscreen) and spirometry.

Methods Data on 42 poorly controlled severe asthma patients attending clinic who underwent no change in treatment between two timepoints (T1 and T2) were retrospectively evaluated.

Results The mean baseline demographic data were as follows: gender (F/M) 27/15; age 53 years; FEV₁87%; FEF₂₅₋₇₅51%; R5 158%; ACQ 2.1; 4 exacerbations requiring OCS in past year; mean BDP equivalent ICS dose of 1850µg and mean duration between T1 vs T2 11 months. No significant differences were detected for spirometry, IOS and ACQ between T1 and T2. Table 1 depicts the mean within subject% changes with two-sided 95%CI, CVs with two-sided 95%CI and BVs with one sided 97.5%CI. The within subject BV in ACQ was 0.6 units which is similar to the conventional MCID value of 0.5. Thus, BV values for spirometry and IOS could perhaps be interpreted as the change required for a clinically