S119 INDUCIBLE LARYNGEAL OBSTRUCTION MASQUERADING AS WORK-RELATED ASTHMA; A NEW APPROACH

J Feary, B Fitzgerald, J Szram, J Hull, J Selby, M Mataksori, G Scadding, P Cullinan. *Royal Brompton and Harefield NHS Foundation Trust, London, UK*

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Introduction The specific inhalation challenge (SIC) is the reference standard test for diagnosis of occupational asthma in people with immunological sensitisation to a specific agent. In our occupational lung disease clinic, we recognise a separate group of patients who report symptoms consistent with inducible laryngeal obstruction (ILO) triggered by one or more agents which are generally not recognised sensitisers. Symptoms, which include throat and chest tightening, voice change, dyspnoea and wheeze, are frequently misdiagnosed as work-related asthma, "allergy" and even anaphylaxis. In such cases securing the correct diagnosis can avoid unnecessary medication use, excessive health care utilisation and occasionally loss of employment. We have designed a SIC to provide objective confirmation of the diagnosis of ILO in the occupational setting.

Method Patients are carefully selected to undergo ILO-SIC. After histamine challenge testing, spirometry and direct laryngoscopy, they are exposed, in a specialist exposure chamber, to the agent (s) which provoke their symptoms. Each challenge is bespoke according to the patient's triggers, work environment and comorbidities. Exposure is usually continued until the symptoms experienced in the workplace are reproduced, or to a level expected to cause airway irritation in a control individual. Direct laryngoscopy and measurement of spirometry is repeated and any anatomical and physiological changes noted.

Results We have carried out 30 such challenges (90% women; mean age 45 years (SD 9.4)) to date. Agents have included perfumes, household paint and hospital cleaning products. In 87% of cases, we replicated symptoms experienced in the workplace. In 53% of cases, clear changes of ILO were seen. In those with normal laryngoscopy, the SIC is equally useful in reassuring patients that symptoms experienced are not dangerous, nor consistent with anaphylaxis or similar. Following careful explanation of the diagnosis, patients are managed conservatively or referred to specialist physiotherapists or voice therapists if indicated. Asthma treatment can often be withdrawn over time.

Conclusion A precise diagnosis in cases of occupational asthma is key to successful outcome; in this setting, we increasingly see patients with occupational (or other environmental) ILO. ILO-SIC testing in specialist centres can provide objective evidence to assist diagnosis avoiding unnecessary investigation and treatment of other conditions.

S120 ASTHMA IN FIRE FIGHTER APPLICANTS: BURDEN OF DISEASE AND FACTORS PREDICTING SUCCESSFUL APPLICATION

[1]J Szram, [1]SJ Schofield, [1]B Fitzgerald, [2]P Cullinan. *[1]Royal Brompton and Harefield NHS Foundation Trust, London, UK; [2]NHLI Imperial College, London, UK*

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Asthma is of concern to UK fire services that need to maintain maximal operational capability; current guidance suggests specialist respiratory review of applicants with a history of asthma, including tests of non-specific airway responsiveness. We present data from our occupational lung disease clinic over a 17 year period.

Between March 1999 and January 2016, 112 firefighters were assessed; 90 of these completed histamine provocation testing allowing measurement of non-specific bronchial hyper-responsiveness using PC20 to histamine. Retrospective case note review was undertaken to look for predictors of PC20 from clinical history in this cohort. Subsequent follow up included recorded outcome of application and reported symptoms on future employment in the fire service.

Unsurprisingly the majority of applicants were male (87.8%, n = 79) and atopic (78.6% n = 66). Around one third had experienced symptoms 27 (31.8) or taken treatment 32 (38.0) in the last year. Most patients were taking no asthma therapy at the time of assessment (64.4%, n = 58) with the majority of those on therapy taking a reliever only (n = 20, 22.2%). Three quarters (75.6%) had normal bronchial reactivity at the time of assessment (PC20 > 16 mg/ml histamine; n = 68) and 85.6% borderline normal airway responsiveness (PC20 > 8 mg/ml histamine; n = 77).

Complete data on follow up was available for 86% of those assessed (n = 90); 64 of these had a recorded PC20. Table 1 shows the predictive factors for successful application in this cohort. Applicants were more likely to be rejected if they were older at time of application; reported recent asthma symptoms or use of treatment in the last year, had a history of childhood asthma or a measured PC20 of less than 16 mg/ml.

The findings of this study suggest that a history of asthma in this occupational group remains a concern to occupational health teams focusing on operational capability of workforces with safety critical roles. Further follow-up of this cohort or a wider prospective study could provide applicants with asthma and their recruiters with useful guidance on individual suitability for employment as a fire fighter.

Abstract S120 Table 1 Characteristics of 64 fire service applicants with asthma who had a known recruitment outcome (excluding those who withdrew application)

	Accepted n = 57	Not accepted (health grounds) n = 7	P value
Male	51 (89.5)	5 (71.4)	0.209
PC 20 ≥ 8	53 (93.0)	3 (42.9)	0.003
PC 20 ≥ 16	47 (82.5)	3 (42.9)	0.036
Recent symptoms	18 (34.6)	6 (85.7)	0.015
Recent treatment	20 (38.5)	6 (100.0)	0.006
Atopic	42 (79.3)	4 (57.1)	0.337
Adult asthma	25 (46.3)	5 (71.4)	0.255
Childhood asthma	42 (77.8)	3 (42.9)	0.070
Age at application	24 (18–46)	31 (24–40)	0.032

S121 THE OCCUPATIONS AT INCREASED COPD RISK IN THE LARGE POPULATION-BASED UK BIOBANK COHORT

[1]S De Matteis, [1]D Jarvis, [2]A Darnton, [1]L Rushton, [1]P Cullinan. *[1]Imperial College London, London, UK; [2]Health and Safety Executive, Merseyside, UK*

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