MS-based analytical technique. The principal findings of this study are (i) PTR-MS evidence for the flow dependency of exhaled acetone; (ii) changing minute ventilation can both increase and decrease the concentrations of selected exhaled trace gases; and (iii) concentrations of certain volatiles were not significantly altered by respiratory manoeuvres in healthy volunteers.

These preliminary observations may have important implications regarding the standardisation requirement for measuring and reporting the concentrations of exhaled trace gases in the future. Further larger studies both in healthy and diseased subjects are necessary to expand on these observations and to provide mechanistic insights into exchange kinetics of affected volatiles. Such studies may help to further define the exact role of on-line MS technologies in non-invasive diagnosis and monitoring pulmonary and systemic diseases.

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An additional table is published online only. To view this file please visit the journal online (http://thorax.bmj.com).

Competing interests None.

Ethics approval This study was conducted with the approval of the Riverside Research Ethics Committee (project reference number: 08/H0706/134).

Provenance and peer review Not commissioned; externally peer reviewed.

Accepted 9 February 2011
Published Online First 7 April 2011
doi:10.1136/thx.2011.161208

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Association of IgG4-related disease and sarcoidosis

Autoimmune pancreatitis (AIP) is a syndrome characterised by an enlarged pancreas with an irregular narrowing of the main pancreatic duct, a high serum IgG4 concentration and IgG4-positive plasma cell tissue infiltration.

A wide variety of lesions have been associated with AIP, including pulmonary lesions. Consequently, the terms "IgG4-positive multi-organ lymphoproliferative syndrome (IgG4+ MOLFS)" seem more appropriate. To our knowledge, sarcoidosis has never been reported in association with AIP. We report the case of an association of AIP with sarcoidosis in an elderly woman.

An 80-year-old woman presented with a 1-year history of chronic diarrhoea and a weight loss of 12 kg during the previous 6 months. Physical examination was normal. Chest and abdominal CT scan disclosed an increased volume of the pancreas, coeliac and...
hilar lymphadenopathy and pulmonary lesions (figure 1). Pancreas biopsies revealed chronic pancreatitis. Accessory salivary gland and coeliac adenopathy biopsies showed non-caseating giant-cell epithelioid granuloma. The tuberculin purified protein derivative test and the Quantiferon assay were both negative. Laboratory analysis revealed a polyclonal hypergammaglobulinemia with IgG level at 55 g/l; serum IgG4 level was increased at 6.8 g/l (normal<0.8 g/l), white blood cell count revealed a lymphopenia (1000 mm<sup>3</sup>/l) and ACE was within the normal range.

Because of the histological picture of non-tuberculous granulomas, and mediastinal lymph nodes with pulmonary involvement on chest CT, sarcoidosis associated with an IgG4+ MOLPS was diagnosed. Corticosteroids (1 mg/kg/day) led to a dramatic improvement in the general and digestive manifestations within a 1-year follow-up.

AIP is a form of chronic pancreatitis characterized by a high serum IgG4 concentration and abundant IgG4-bearing plasma cell infiltration in the pancreatic lesion. This entity has been reported to be associated with a variety of extrapancreatic lesions. It is generally accepted that this form of pancreatitis is a part of a multi-systemic clinical syndrome, and this disease was redefined as ‘IgG4-positive multi-organ lymphoproliferative syndrome’.2

Recently, Tsushima et al<sup>3</sup> compared the clinicopathological features of pulmonary lesions in 19 patients with AIP and 8 patients with sarcoidosis; 17 of the 19 patients with AIP showed bilateral hilar lymphadenopathy, while 8 showed pulmonary nodules. IgG4-positive plasma cells were identified in the pulmonary lesions of patients with AIP. Our patient presented an authentic chronic pancreatitis with a significant increase in serum IgG4 level. She fulfilled the revised diagnostic criteria for AIP<sup>4</sup> Because of the presence of pulmonary lesions and hilar lymphadenopathies, salivary gland and coeliac adenopathies were biopsied, and they both revealed non-caseating epithelioid cell granulomas. Although sarcoidosis is uncommon in the elderly, the presence of disseminated granulomatous lesions led us to suspect sarcoidosis. However, it is difficult to determine whether our 80-year-old patient has an IgG4-related disease with systemic granulomatous lesions or an association of AIP with true sarcoidosis.

To our knowledge, such an association of AIP with granulomatous lesions mimicking sarcoidosis has never been reported previously in the literature, and this enlarges the spectrum of IgG4-related disease.

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Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; not externally peer reviewed.

Accepted 9 February 2011
Published Online First 17 April 2011
doi:10.1136/thx.2011.160341

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CORRESPONDENCE

Gender differences in COPD: are women more susceptible to smoking effects than men?

We read the paper by Serheim et al<sup>1</sup> with interest since possible clinical bias with regard to sex and disease in terms of diagnosis and treatment is clearly an important issue. The main problem with comparing the effect of a disease such as chronic obstructive pulmonary disease (COPD) between the two sexes is how one expresses the lung function deficit so that the data for the two sexes can be correctly analysed together.

We believe the method used by Serheim et al<sup>1</sup> introduces a sex bias that may be incorrectly influencing their result. The authors used percentage predicted to express the degree of abnormality, and, depending on the equations used, this may bias the result with regard to sex and age.2 Using the equations used by Serheim et al<sup>1</sup>, the scatter about the predicted value is the same for both sexes although the absolute predicted values for men are higher. This bias is greater in older subjects and those with worse lung function. When using the ECCS prediction equations, this effect is still present but is much less than that seen with the equations used by Serheim et al<sup>1</sup>. Thus, using percentage predicted with the authors’ prediction equations automatically makes low results for women appear worse than equivalently low results for men.

We do not believe the paper by Serheim et al<sup>1</sup> has proved that women are more susceptible to smoking effects and their conclusion could well be an artefact based on the incorrect method used for expressing lung function abnormality. We suggest that the authors should rework their data with statistically valid methodology with their equations, such as using standardised residuals<sup>3</sup> or centile values, and perhaps verify this with the generic equations of Stanojevic et al<sup>4</sup> in order to determine if women are truly more susceptible than men to the effects of smoking.

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Competing interests None.

Provenance and peer review Not commissioned; not externally peer reviewed.

Accepted 18 October 2010
Published Online First 15 November 2010
doi:10.1136/thx.2010.152348

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