FIGURE 1. Relationship between *per capita* gross domestic product (GDP; World Bank data, 2005) and incidence of tuberculosis per 100,000 population. For graphical presentation, the third root of the population (millions) divided by 10 was used to determine the size of the symbols. This arbitrary choice provides a visual appreciation that large sized populations do not bear an excessive weight at the extremes of the axes, but are rather distributed across the entire scale. Both abscissa and ordinate were drawn logarithmically. 1; India; 2: China; 3: UK.

of both TB (2004) and GDP (2005) was chosen as the intuitively simplest model. Both unweighted (not shown) and weighted regression gave similar results (fig. 1).

To visually convey the lack of influence of population size in figure 1, the size of the circles representing individual countries was varied according to an arbitrarily chosen factor, as directly proportional graphical representation would have resulted in gross visual distortion. Examples for the correlation between GDP and TB are shown in figure 1 for India, China and the UK. The regression analysis suggests that each

doubling of GDP was associated with a 38.5% decrease in the incidence of TB. For instance, the ratio of *per capita* GDP between India and China is ~ 2.3 and the incidence of TB is 40% lower in China than in India.

As the unit of measurement is a country, this ecological analysis does not allow a conclusion to be reached for individuals. Furthermore, the analysis was not adjusted for HIV infection, largely because estimates of HIV infection are incomplete for many countries. Nevertheless, the take-home message is clear and emphasises a major thrust of the World Health Organization's strategy: to stop tuberculosis, we must fight poverty.

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STATEMENT OF INTEREST

None declared.

REFERENCES

- 1 World Health Organization. Global tuberculosis control: surveillance, planning, financing. WHO report 2006. Geneva, World Health Organization, 2006.
- 2 The World Bank. <http://web.worldbank.org/eternal/default/main?menuPK=64133165&pagePK=64133485&piPK=64133503&g=gdp&theSitePK=239419> Date last accessed: September 8, 2008. Date last updated: August 2008.
- 3 World Population Prospects. The 2004 Revision. Volume III: Analytical Report. New York, United Nations Population Divisions, 2005.

DOI: 10.1183/09031936.00078708

Diagnosis of pulmonary thromboembolism with endobronchial ultrasound

To the Editors:

Endobronchial ultrasound (EBUS) is a new addition to the diagnostic armamentaria of the pneumologist. Its properties allow for excellent visualisation of structures surrounding the airways and, as such, have significant potential to add to diagnostic bronchoscopies. EBUS has a definitive role in detection and biopsy of mediastinal lymph nodes or masses

[1, 2]. However, we believe that the potential use of this procedure is still underestimated. For this reason, in this letter we report on the case of a 26-yr-old male admitted to the Interventional Pneumology Dept of G.B. Morgagni Hospital (Forlì, Italy) because of fever and exertional dyspnoea.

The patient presented with fatigue, blood-tinged sputum and hypoxia (arterial oxygen tension 8.2 kPa (62 mmHg)). The

plasma D-dimer level was low ($282 \mu\text{g}\cdot\text{L}^{-1}$). Chest radiography showed multiple ill-defined increased densities in both lower lung fields. High-resolution computed tomography was then performed and showed ill-defined, wedge-shaped increased densities with patent airways in the posterior subpleural regions of both lower lobes. The computed tomography differential diagnosis was organising pneumonia, bronchopneumonia, Churg–Strauss syndrome, Wegener granulomatosis, pulmonary haemorrhage, or vasculitis of various causes. Transbronchial lung biopsy was performed in the right lower lobe. Microscopic examination showed alveolar haemorrhage without evidence of vasculitis, eosinophilic infiltration or organising pneumonia. Serum circulating antiphospholipid antibodies were eventually found. Therefore, pulmonary angiography was performed and an intra-arterial low density was found in the right main pulmonary artery. This finding was believed to be compatible with pulmonary thromboembolism; however, it didn't exclude a possible right pulmonary artery sarcoma. In this case, the only procedure that would rule out the presence of a right pulmonary artery sarcoma (without delays in diagnosis) with any reasonable certainty was surgery.

We decided to perform rigid bronchoscopy under general anaesthesia, followed by EBUS using an ultrasound bronchoscope (model BF-UC160F-OL8; Olympus, Tokyo, Japan). The use of EBUS allowed us to see, in real-time, a blood clot floating into the right main pulmonary artery not infiltrating the wall of blood vessel (see the video provided as online supplementary material). This finding confirmed the diagnostic hypothesis of pulmonary thromboembolism in a patient

affected by antiphospholipid antibodies syndrome and avoided diagnostic surgery.

In conclusion, we believe that the indications for use of endobronchial ultrasound are manifold and are certainly greater than those so far recognised. This procedure should therefore be implemented and further developed in interventional pneumology.

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STATEMENT OF INTEREST

None declared.

SUPPLEMENTARY MATERIAL

This article has supplementary material accessible from www.erj.ersjournals.com

REFERENCES

- 1 Herth F, Becker HD, LoCicero J 3rd, Ernst A., Endobronchial ultrasound in therapeutic bronchoscopy. *Eur Respir J* 2002; 20: 118–121.
- 2 Sheski FD, Mathur PN. Endobronchial ultrasound. *Chest* 2008; 133: 264–270.

DOI: 10.1183/09031936.00075208

Pneumonia in the context of severe sepsis: a significant diagnostic problem

To the Editors:

The Surviving Sepsis guidelines [1] highlighted a need to improve clinical standards for the management of severe sepsis and septic shock within the Nottingham University Hospitals NHS Trust (Nottingham, UK). We formed a multi-directorate task group to conduct a near real-time retrospective gap analysis of all adults with significant positive blood cultures of a pathogenic organism within the Queen's Medical Centre (Nottingham), between November 1, 2005 and March 31, 2006. The design, objectives and outcomes have been described previously [2]. Patients were included if they met the criteria for severe sepsis or septic shock, and were considered

for full and active management. They were excluded if they were aged <16 yrs or were transferred from another hospital. During the study period, 229 suitable patients were identified and data were available from patient case notes for all subjects. Following exclusions, 46 subjects were analysed.

As part of the study, we recorded the diagnostic impression of the attending doctor at the start of the septic episode. The most common cause for the septic episode was recorded as pneumonia in 21 (46%) subjects, urinary infection in 10 (22%) subjects and biliary infection in five (11%) subjects. Of the 21 subjects initially deemed to have pneumonia, only 15 had contemporary radiological changes supporting this diagnosis.