

Sudden onset dyspnea; are we in danger of being ageist with our diagnostic sieve?

Abstract

Pneumothorax is a common presentation to both emergency and respiratory departments alike. Typically primary spontaneous pneumothorax (PSP) is taught as a disease of young, male patients with a mean age at presentation of approximately 30years. We present a case of an 87year old patient presenting with her first pneumothorax. Detailed history, lung function and radiology confirmed this was not secondary to underlying lung disease but rather true PSP. The existence of PSP in the elderly is acknowledged, albeit rarely, to occur within previous epidemiological studies though we believe that our patient is the oldest person to feature in a published case report confirming this. Furthermore, our patient provides an important clinical lesson for respiratory diagnosticians as our admitting team, in the face of classical symptoms and signs, did not even consider pneumothorax as a possible diagnosis. Indeed, our patient provides a stark warning of inherent ageism blinding our diagnostic approach.

Keywords: primary spontaneous pneumothorax, secondary pneumothorax, aging

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Introduction

Mrs DW, an 87year old lady, presented to our emergency department with a 2day history of increased shortness of breath limiting her previously normal exercise tolerance to 5yards. Further history revealed this had been preceded by 2days of coryzal symptoms and there had been 1 episode of chest pain whilst sitting on the sofa 24 hours after the onset of breathlessness. This pain was non-pleuritic in nature occurring on the R-side of the back at approximately the level of T6, it did not radiate and spontaneously settled after 2hours. Her only past medical history was of essential hypertension, treated with amlodipine 10mg once daily.¹⁻³ She denied any previous smoking history and reported no significant occupational exposure to dusts. On admission, Mrs DW was hypoxaemic with saturations of 87% on room air, tachypneic with a respiratory rate of 22 and examination revealed decreased air entry on the left hand side. The admission bloods were unremarkable with normal inflammatory markers. The admitting doctor provided a differential diagnosis of congestive cardiac failure

or pulmonary emboli. A chest radiograph confirmed a large left sided pneumothorax (Figure 1). Given Mrs DW's age the admitting team assumed this was a secondary pneumothorax and given its large size proceeded, in accordance with British Thoracic Society guidelines,⁴ to insert an inter costal chest drain. After 12hours the chest drain had stopped bubbling and repeat chest radiograph confirmed complete re-expansion of the left lung. The chest drain was then removed and re-expansion, with complete symptomatic improvement, remained. Upon respiratory review the assumption remained that this was a secondary pneumothorax but Mrs DW re-confirmed that she had never smoked nor suffered from any chronic respiratory symptoms. Furthermore re-expansion chest radiograph showed no features of structural lung disease (Figure 1) and post admission lung function tests revealed supra-normal results (FEV1 1.81L, FVC 2.66L, TLC0 6.51). Therefore it was concluded that Mrs DW had suffered from her first primary spontaneous pneumothorax aged 87. She was not overtly troubled by the clinical advice not to take up scuba diving.

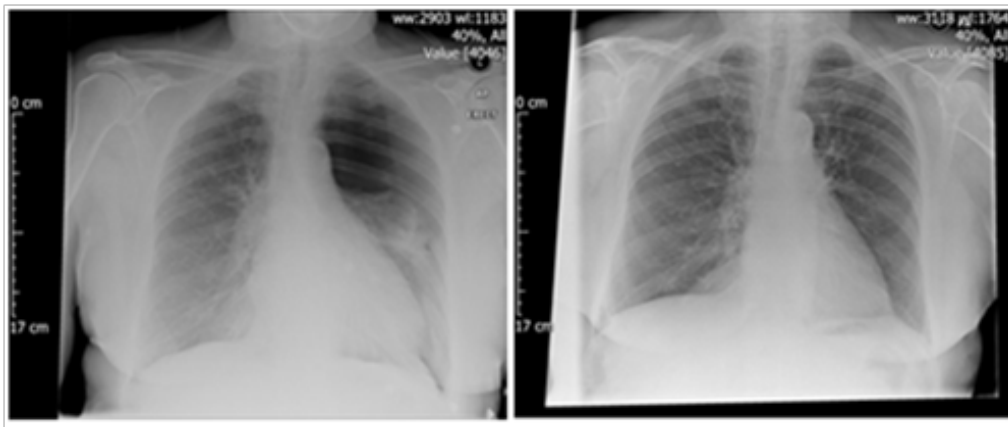


Figure 1 Chest radiograph at admission and then 6 weeks following discharge.

Discussion

Traditionally, the aetiology of PSP was linked to the formation and rupture of subpleural blebs. This is principally because in imaging studies these abnormalities have been found in up to 90% of cases.⁵ However more recent studies have shown that the presence of local pleural porosities⁶ and concurrent local small airways inflammation⁷ mean that the true aetiology of spontaneous pneumothorax is much more complex and not yet fully understood. As present in our patient, the common presenting symptoms of PSP are ipsilateral chest pain and dyspnea.³ Though like our patient, the dyspnoea in PSP is often less marked than expected from the radiological changes and therefore, diagnosis is often delayed by several days.⁸ Furthermore, and in contrast to logical thinking, PSP is not normally set off by strenuous exertion but rather like our patient most commonly occurs at rest.⁹ Therefore in spite of characteristic clinical signs; hyper-resonance, decreased breath sound and reduced lung expansion on the affected side, guidelines acknowledge that initial diagnosis can be difficult and often imaging is required.⁴

We believe Mrs DW represents the oldest patient featured in a published case report of primary spontaneous pneumothorax. Indeed the largest study to date, an epidemiological assessment of all hospitalised instances of spontaneous pneumothorax in adults in France 2008-2011¹⁰ used 65years as a cut off for which primary spontaneous pneumothoraxes do not occur, and their oldest case was 59years. Similarly the largest UK study used general practice and hospital databases to identify pneumothoraxes in both the community and hospital,¹¹ though not segregating data for primary and secondary pneumothorax, and also postulated that the biphasic age distribution of pneumothorax is primarily down to secondary pneumothoraxes occurring post 55years. There is one Japanese study¹² retrospectively reviewing all female cases of spontaneous pneumothoraxes in the country over 8 years, in which PSPs over the age of 70years were acknowledged, albeit rarely, to exist. And finally, one study reviewing causes for reoccurrence of pneumothorax mentions 2 cases of spontaneous pneumothorax occurring after the age of 84years.¹³ Finally both the British thoracic guidelines,⁴ which are endorsed by the American Thoracic Society,¹⁴ and the European Respiratory Society,¹⁵ state PSP is rare post 55years old.

The differentiation between PSP and secondary pneumothorax is an important one. PSP is typically a benign condition with a mortality rate of approximately 1 per million patients.¹¹ Secondary pneumothoraxes, on the other hand, are considerably more complex, with much higher mortality rates and much more significant hypoxaemia.¹⁶ This difference is reflected in international treatment guidelines where secondary pneumothorax requires more aggressive initial treatment with intercostal chest drain, and earlier discussion with thoracic surgeons in the situation of poor expansion.^{4,15} Our patient, despite her advanced age, had no evidence either physiologically on lung function or radio graphically on repeat chest radiographs of underlying respiratory pathology. Furthermore, her delayed presentation and rapid successful re-expansion were all in keeping with PSP. Therefore we concluded that Ms DW represents the rare, and indeed the oldest case-reported, occurrence of first presentation PSP in the elderly. This is an important case to recognise as intuitively the admitting team did not even consider the diagnosis of pneumothorax. Furthermore, our respiratory service initially assumed there must be unrecognised respiratory disease. This instigated repeated and detailed history taking looking for any evidence of respiratory pollutant exposure

or significant prior infections, all of which were negative. In effect our patient's age had blinded us all from immediately recognising an otherwise classical presentation of PSP.

Conclusion

In our case, even in the presence of classical chest signs, the admitting team, understandably, postulated that cardiac failure or pulmonary emboli were likely to be the underlying diagnosis. It was only following the chest radiograph that pneumothorax was considered. This is why the case of Mrs DW is important, highlighting how intrinsic ageism in our diagnostic algorithms can cause diagnostic 'down-weighting' or even 'blindness' to clinical signs presented. With Mrs DW this 'ageist-slip' caused no problems due to the excellent sensitivity of chest radiographs for pneumothorax. However there are multiple other diagnoses, from HIV through to substance abuse that may inadvertently be missed due to inherent ageism within our diagnostic sieves.

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Conflict of interest

None of the authors have any conflict of interest to declare.

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