Music as a risk factor for primary spontaneous pneumothorax

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Mrs A, a 58-year-old never-smoker, developed sudden onset of chest pain and shortness of breath while standing in front of a loudspeaker at a music concert. A chest x-ray (CXR) showed a moderately large left-sided pneumothorax without any signs of tension and a distance from the apex of 4.4cm (Figure 1). Her past medical history includes an intermittent supra-ventricular tachycardia and previous sarcoidosis. This was diagnosed in 1990 after she was found to have mild right paratracheal lymphadenopathy on CXR. No biopsies were taken at this time. Subsequent spirometry showed normal lung function and a CT scan of the chest revealed no evidence of major organ involvement and no radiographic evidence of significant pulmonary involvement. Mrs A was followed up in Respiratory clinic for approximately five years. She has no family history of pneumothoraces.

Figure 1:
After attempting conservative treatment and aspiration for this primary spontaneous pneumothorax, Mrs A required a chest drain. Three weeks post insertion, the chest drain stopped working and Mrs A remained symptomatic. A CT chest at this time showed a persisting left pneumothorax, with no cause seen. There was also no evidence of sarcoidosis, large bullae or other parenchymal disease (Figure 2). A second drain was placed due to incomplete resolution of the pneumothorax, and lasted seven days before blocking. At this stage, Mrs A developed a left pleural effusion secondary to infection, treated with antibiotics and drainage via a third chest drain. She was discharged home and followed up in outpatient clinic. However, the left pneumothorax remained unresolved, and Mrs A continued to be mildly short of breath. Three months later, Mrs A underwent a left upper lobe bullectomy and pleurodesis with good effect. There has been no recurrence of pneumothorax 12 months post-surgery.

The incidence of primary spontaneous pneumothorax is 22.7 cases per 100,000 population each year, and occurs more frequently in males than females, with a ratio of 3.3:1.1 The exact pathogenesis of primary spontaneous pneumothorax is largely unknown. One theory is a result of an air leak at areas of emphysematous-like changes in the lungs.2,3 Another potential mechanism, termed pleural porosity, involves areas of disruption of the visceral pleura mesothelial cells by a more porous inflammatory cell layer, therefore allowing more air leakage.4 These theories in combination with a precipitating event, such as exposure to loud music, may be relevant in the causal pathway of pneumothorax.4

To date, there has only been one case series detailing five cases in four young male patients who developed a primary spontaneous pneumothorax after being exposed to loud music.5 This paper proposes that loud music can cause an air leak via the mechanical compression/decompression of the sound waves creating a ‘blast injury’ against the delicate alveolar structures or, as a direct result of the pressure changes from the high energy, low frequency range of the music. It is noted however, that three out of four patients described in this series had a smoking history, and the fourth patient had radiological evidence of bullae in the lungs. The timing between the music exposure and the onset of pneumothorax
in these patients could possibly suggest a causal relationship. We hypothesise that exposure to loud music could be a precipitating factor causing a pneumothorax at a weakened area of lung tissue.\textsuperscript{2,5}

The exact mechanism of music causing pneumothorax needs further investigation.

The case of Mrs A together with the case series by Noppen et al\textsuperscript{5} put forward a case that music should be considered as a rare risk factor in patients presenting with a pneumothorax. It is advisable that people with risk factors for pneumothoraces avoid close proximity to high energy, low frequency music commonly found at concerts.

\textbf{REFERENCES:}


