Tension pneumothorax case report is misleading

The problem with the recent case report ‘Tension pneumothorax mimicking giant emphysematous bullae’\(^1\) is that the patient clearly did not have a tension pneumothorax. He was not particularly unwell and had only a minimal mediastinal shift. A much greater mediastinal shift can be seen in non-tension pneumothorax.\(^2\) The actual definition of tension pneumothorax is not generally agreed. The 2003 British Thoracic Society guidelines\(^3\) refer to tension pneumothorax occurring ‘when the intrapleural pressure exceeds the atmospheric pressure throughout inspiration as well as expiration’. By 2010, this had been modified to ‘exceeds atmospheric pressure for much of the respiratory cycle’.\(^4\) The classical division of pneumothoraces into open, closed and valvular has no evidence to support it. It seems extremely unlikely that in so-called open pneumothoraces that air in the pleura actually re-enters the collapsed lung on expiration and is breathed out and we do have experimental evidence that this does not occur. Even supposing the putative valve mechanism existed, the laws of physics preclude pressures during inspiration from being above atmospheric pressure.\(^5\) In the expiratory phase, pressures in all pneumothoraces exceed atmospheric pressure if there is anything but totally passive expiration, otherwise intercostal drainage of pneumothoraces without suction would not work. It is for this reason that the much taught ‘hiss’ sign is worthless.

Published reports of tension pneumothorax in spontaneously breathing patients are very rare and none are convincing.\(^2\) Some, as in the case reported by Gonzalez et al, are healthy patients misdiagnosed on radiological appearances and the rest are patients with severe trauma and large pneumothoraces who unsurprisingly tolerate the subsequent hypoxaemia badly. Hypoxaemia rather than cardiovascular collapse is in fact the consistent finding in experimental pneumothorax in animal models. Severe consequences of this with rapidly expanding pneumothoraces in trauma patients or those with lung disease are not unexpected but the mechanism is not the generation of supra-atmospheric pressure. The term tension pneumothorax should be abandoned for spontaneously breathing patients and reserved for those undergoing positive pressure ventilation.

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