CORRESPONDENCE

Spontaneously breathing patients get tension pneumothoraces

The recently published correspondence by Simpson is welcomed in so far as it correctly highlights some issues concerning tension pneumothorax. We agree that there are large differences in the pathophysiology and clinical manifestations of spontaneously breathing and mechanically ventilated patients presenting with a tension pneumothorax. It is also well established that hypoxaemia is a consistent finding in this disease and a hiss of air on pleural decompression can be misleading.

However, Simpson’s correspondence misquotes the 2003 review by Leigh-Smith and Harris. First, we did not state that case reports of tension pneumothorax in spontaneously breathing patients were rare or unconvincing. In fact, we cited 18 case reports of spontaneously breathing patients with a convincing diagnosis of tension pneumothorax of both spontaneous and traumatic aetiologies. Further, the index case which sparked the authors’ interest in this subject was a very advanced tension pneumothorax in a spontaneously breathing patient. Since that case, over 10 years ago, we have seen (individually or by proxy through our interest in others’ cases) multiple other examples of tension physiology in spontaneously breathing patients, unfortunately including a death due to non-treatment. Second, Simpson’s referral to definitions of tension pneumothorax employing use of intra-pleural pressure (IPP) should refer to the original animal experiments, which pointed out that ‘positive IPP throughout the respiratory cycle’ was only a useful definition of tension pneumothorax in the ventilated subject. In awake subjects, the IPP must be less than atmospheric pressure during part of the respiratory cycle if air is going to continue to enter the pleural cavity.

We believe that previous definitions of tension pneumothorax are of limited use because measurement of IPP is impractical, the extent of radiological mediastinal shift is variable and hypotension occurs uncommonly in spontaneously breathing patients. We would therefore like to rehighlight a clinical definition for tension pneumothorax as being ‘a pneumothorax that results in significant respiratory or haemodynamic compromise (the latter especially in ventilated patients) that reverses on thoracic decompression alone.’

While acknowledging that ventilated patients usually present at the point of decompression, in contrast to spontaneously breathing patients who normally present during a variable period of compensation, we believe that the term ‘tension pneumothorax’ should continue to be used for both conditions. The one word ‘tension’ immediately alerts the clinician to potential decompression and the need for expedient investigation (ie, radiography or ultrasound) and/or thoracic decompression.

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