Flail chest: are common definition and management protocols still useful?†

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We eagerly read and appreciate your weighty journal’s hint on the subject flail chest in the April 2010 issue [1]. We wish to respectfully comment on this subject, since we strongly suppose that some of our observations and experience of flail chest in our centre, with a heavy workload to contend with, [2] may be of great interest and useful in this field.

Flail chest is a problem whose definition, diagnosis and management has changed over the years [3]. We suppose that the classic definition of flail chest has been sufficiently mentioned in previous studies and textbooks, and is known to the audience [1, 3]. Diagnosis is presumed to be based on observing the floating segment on the patient’s chest wall. Also, detecting specific types of rib fracture in a plain chest radiograph would confirm the diagnosis [1]. Also, as a result of our observations, we suggest that another diagnostic sign could be the tenderness in two separate but parallel lines on the patient’s chest wall, which may or may not develop to the paradoxical movement sign later.

But practically, based on our observations, the ‘floating segment’ in the chest wall is seen much less frequently than expected. Even if present, the patient may develop this sign later in the hospital course. This delay in, or even the absence of, this sign seems to depend on the sites of fracture and isolated segment as well as power of muscle bulk over the region to support those fractured ribs.

Secondly, flail chest diagnosis by chest X-ray sometimes encounters difficulties, especially when one of the fracture lines is located in the anteromedial part of the chest wall in the costochondral junction. In these cases, a chest CT scan may help the diagnosis [4, 5]. Using a CT scan also could help in the diagnosis of lung contusion and in excluding the rupture of the great vessels [1]. Also, in these cases, we can depend more on the physical examination.

Moreover, as routine in Advanced Trauma Life Support (ATLS) protocols, diagnosis and management of flail chest is always discussed in the primary survey [6]. But based on the clinical practice, and also by a review of papers and references, it is implied that even if flail chest is diagnosed in primary survey either by physical examination or, later on, with the plain chest radiograph, no quick intervention will be done for its management and patient would rather be completely sedated, or be given analgesics, and admitted to the intensive care unit (ICU) or somewhere else for precise monitoring or perhaps be put on mandatory mechanical ventilation, as suggested by our observations. These patients, if merely having non-integrity of the chest wall and no other acute conditions, such as pneumothorax or haemothorax, often will not need any emergency intervention or even mechanical ventilation for hours. Also, chest tube insertion is considered only in those with pneumothorax or haemothorax. All in all, we believe that the management of flail chest should be considered in the secondary survey and the physician’s attention would better be diverted merely towards those conditions threatening the patient’s life in the primary survey.

Finally, confining the definition of flail chest only to those cases with multiple rib fractures in two points may be non-comprehensive, since we have observed repetitiously that multiple broken ribs are present in one point but along a straight line, causing the patient to have non-integrity of the chest wall as well as respiratory failure. We would like to suggest using the phrase ‘non-integrated chest wall’ instead of flail chest for all cases in which insufficiency of the chest wall function leads to respiratory failure.

REFERENCES

[3] Wilson B. Where we have been, where we are now, and where we are going: preliminary results with operative fixation of flail chest. J Trauma Nurs 2011;18:18–23.