Pleural Effusion: The Thorn Sign*

Not a Rare Finding

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Eleven percent of an unselected series of 157 patients with pleural effusion showed a thorn-like protrusion of fluid at the lateral end of the minor fissure at some time during their illnesses. None of a series of 146 normal x-ray films of young patients showed this “thorn sign.” The thorn sign is a useful radiographic finding of right-sided pleural effusion.

One radiographic finding of pleural effusion which has not been extensively described in the literature is the sign which we have called the “thorn sign.”‡ Previously we have reported several cases in which the pleural thorn has been useful in recognizing pleural effusion of various causes.4 In this report, we present evidence that the pleural thorn sign is indeed not rare as a finding among patients with pleural effusion.

DEFINITION

The pleural thorn describes the presence on a frontal chest x-ray film of a thorn-like lateral thickening of the minor fissure, which tapers medially in the pattern of a thorn (Fig 1). The thorn sign may be seen on upright, supine, or decubitus x-ray films. A similar protrusion of fluid into the end of a fissure may occasionally be seen at the anterior minor fissure on a lateral x-ray film or at the lower end of a major or accessory fissure. For this report, we considered only the classic minor fissure thorn on frontal x-ray films.

MATERIALS AND METHODS

By computerized retrieval (using the MARS system of the University of Missouri, Columbia), a list was generated of all patients reported by the Radiology Department as having right-sided, left-sided, or bilateral pleural effusion between Aug 29 and Dec 31, 1978. These reports had been part of the routine service of our department at a time when neither of us was present. The records of 157 patients were nonselectively retrieved by this method for our review.

All available x-ray films in the complete radiographic file of each of these patients was then reviewed by at least one

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RESULTS

No thorn sign was present in any of the 146 normal chest x-ray films which had been previously selected as normal. This included 71 female and 75 male patients. We conclude that in children and young adults, the thorn is not frequently seen in healthy individuals and hence is not a frequent result of the normal anatomic configuration of the minor fissure.

Of the 157 patients who had been reported to have pleural effusion by others, at least one x-ray film during that or another illness showed a definite thorn sign in 17 patients (11 percent). We conclude that indeed the thorn sign occurs in pleural effusion often enough not to be considered a rare finding.

DISCUSSION

In the interpretation of the chest x-ray film, recognition of pleural effusion can have an important bearing on the recognition of disease and in the impression of its probable cause; for example, when an infiltrate is accompanied by pleural effusion and other conditions, such as infarction, tuberculosis, infection with Mycoplasma, or pneumonia due to Hemophilus influenzae, become more likely. Since pleural effusion may layer posteriorly on a supine x-ray film or adopt positions in any position of the patient that do not obliterate the costophrenic angle, it is necessary to be aware of the other signs of pleural effusion, such as the relatively lateral position of the high point of an apparently high diaphragm, a generally increased density of a hemithorax on a recumbent view, or loss of the pulmonary vascular definition behind the diaphragm on an upright x-ray film. In many cases, once pleural effusion is suspected, its presence can be confirmed with a lateral decubitus x-ray film.

Several times a year, we have encountered situations where the pleural thorn was the only, or at least the most obvious, sign of a right-sided pleural effusion; for example, Figure 2 represents a situation where a basal infiltrate is so extensive that the costophrenic angle is difficult to interpret, and the thorn sign confirms pleural effusion as a part of the manifestations of the inflammatory process. We have seen an x-ray film of a child with a right upper lobe infiltrate in whom the only sign of pleural effusion was a thorn, and the diagnosis was later revealed to be tuberculosis. One apparently normal preoperative chest x-ray film (other than the heart) did show a thorn sign in retrospect, and at autopsy (following unsuccessful cardiac surgery on the next day), there was evidence of old as well as fresh pulmonary emboli from a tricuspid valvular myxoma.2

The pleural thorn sign may also be seen in pleural thickening or scarring. In one such patient the pleural thorn became larger and extended more medially as the patient suffered congestive heart failure and regressed to its former size with clinical improvement. Our review of normal chest x-ray films dealt with young patients, thus at a time of life when pleural scarring is less frequent.

REFERENCES