

Bullous degeneration of the left lower lobe in a heroin addict

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Bullous degeneration of the left lower lobe in a heroin addict. F.W.J.M. Smeenk, J. Serlie, E.J. van der Jagt, P.E. Postmus.

ABSTRACT: A 34 yr old heroin addict was referred because of chest pain caused by air-trapping in a bulla in the left lower lobe. There was a marked difference between the functional residual capacity measured by body-plethysmography and helium dilution. A slow wash-in and wash-out were demonstrated by ventilation scintigraphy with Xenon¹³³. Bullous degeneration is a known complication of intravenous drug abuse. Usually these bullae are found in the upper lobes. Possible causative mechanisms are discussed.

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Case report

A 34 yr old male was referred to the emergency department because of pain on the ventral side of his left hemithorax. The pain had existed for a few weeks but had increased suddenly. It worsened with each respiration. The man smoked 10 cigarettes daily and used 0.25 mg heroin intravenously daily.

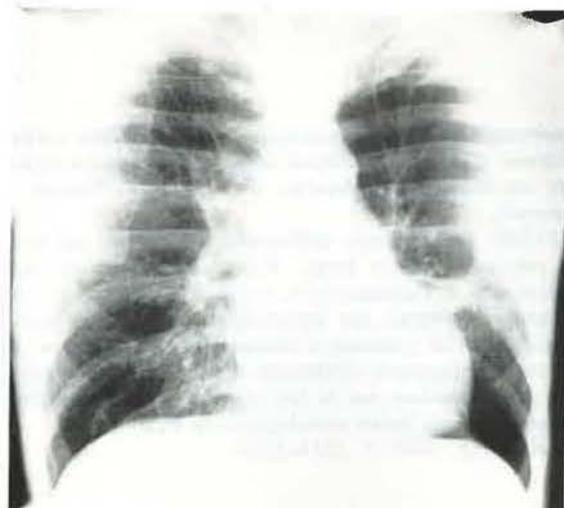


Fig. 1. - Inspiration PA chest roentgenogram on admission showing a minimal lung vessel marking in the lower half of the left lung. PA: posteroanterior.

Three years earlier he had been hospitalized because of pulmonary emboli localized in the left upper and lower lobes, proven by ventilation-perfusion scintigraphy. During this admission he also developed multiple lung abscesses in the lingula, probably

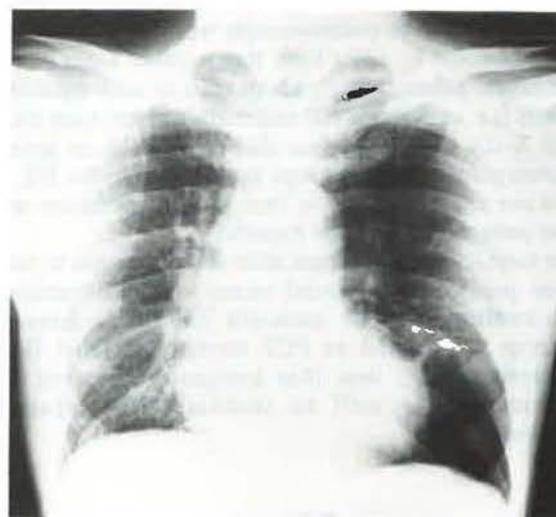


Fig. 2. - Expiration chest roentgenogram showing the same hyperlucent area in the left lung as compared with the inspiration chest roentgenogram but now also showing a shift of the heart and mediastinum to the right and a lesser elevation of the left hemidiaphragm when compared to the elevation on the right side.

due to septic emboli. Physical examination revealed hypersonic percussion over the latero-basal part of his left hemithorax with diminished breath sounds. Further physical examination revealed no abnormalities. Routine laboratory investigations were normal.

The postero-anterior (PA) chest roentgenogram (fig. 1) showed a minimal lung vessel marking in the lower half of the left hemithorax probably with adhesions

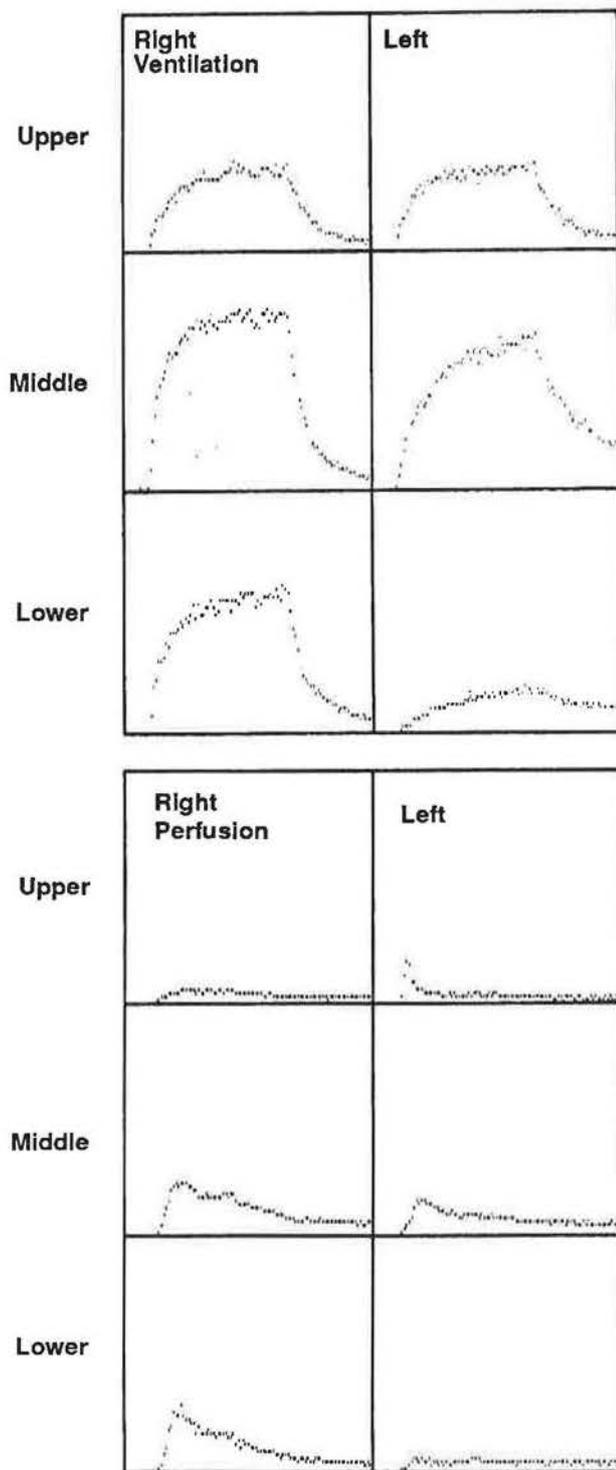


Fig. 3. — Xenon¹³³ ventilation (A) and perfusion (B) scintigraphy showing a very slow wash-in and a very slow wash-out of the radiopharmakon, with ventilation in the lower area of the left lung, whereas the perfusion scintigraphy with Xenon is showing virtually no perfusion in the same area. (On the vertical axis the amount of radioactivity is depicted which could be detected after respiratory inhalation or injection of Xenon¹³³ in the upper, middle and lower part of the left and right lung. On the horizontal axis the time after inhalation or injection of the radiopharmakon is shown).

between the parietal and visceral pleurae laterally. There were no other bulla signs present. On a previous chest roentgenogram, made after recovery from his lung abscesses, there was a more or less normal lung vessel marking present in this area. Because of differential diagnostic problems and subsequent therapy an expiration chest roentgenogram was made (fig. 2). This showed the same hyperlucent area in the left hemithorax and furthermore a shift of the heart and mediastinum to the right. The elevation of the left hemidiaphragm was less than on the right side. Computer tomography of the thorax clearly showed the already suspected bullous degeneration of the left lower lobe with compression of the adjacent lung tissue.

A clue for the possible existence of air-trapping in this patient was given by the difference found in the functional residual capacity (FRC) measured by means of the body plethysmograph (Gould 2800 Autobox: 4.39 l) and the functional residual capacity (FRC) measured by means of the steady-state Helium-dilution method (3.43 l). Ventilation scintigraphy with Xenon¹³³ proved this air-trapping elegantly with a very slow wash-in and a very slow wash-out of the Xenon¹³³ in the left basal area (fig. 3).

Because of persistent complaints a thoracotomy was done (after the patient was weaned from his drug abuse), in which a large bulla was found located in the left lower lobe. This bulla was resected, and the post-operative period was unevenful.

Discussion

GOLDSTEIN *et al.* [1] were the first to relate the existence of bullous degeneration of the lung in *i.v.* drug abusers to this *i.v.* drug abuse. The bullous degeneration found in these drug abusing patients was located in the upper lobes while in our patient it appeared to be confined to the left lower lobe. GOLDSTEIN *et al.* hypothesized that two mechanisms could play a role in the occurrence of bullous degeneration of the lung in *i.v.* drug abusers. Firstly, bullae may develop from coalescence of microbullae produced by foreign body granuloma, a known complication of *i.v.* drug abuse [2]. Secondly, thin walled cavities may be formed by septic or foreign body emboli (also a known complication in these patients [3]) which damage the capillary bed. Coalescence of these cavities would also result in large bullae.

In retrospect, this latter mechanism could have played a role in our patient as in 1984 he appeared to have emboli with miss-match defects on the ventilation perfusion scintigram in two segments of the left lower lobe.

Several authors have emphasized the value of the chest roentgenogram after expiration [4–6]. This case history confirms the importance of this easily accessible diagnostic tool.

References

1. Goldstein DS, Karpel JP, Appel D, *et al.* – Bullous pulmonary damage in users of intravenous drugs. *Chest*, 1986, 89, 266–269.
2. Farber HW, Fairman KP, Glauser FL. – Talc-granulomatosis: laboratory findings similar to sarcoidosis. *Am Rev Respir Dis*, 1982, 125, 258–261.
3. Thomashow D, Summer WR, Soin J, *et al.* – Lung disease in reformed drug addicts: diagnostic and physiologic correlations. *Johns Hopkins, Med J*, 1977, 141, 1–8.
4. Felson B. – *In: Chest roentgenology*, 1st edn. W.B. Saunders Co., Philadelphia, 1973, p.14.
5. Fraser RG, Pare PAJ. – *In: Diagnosis of diseases of the chest*, 3rd edn. W.B. Saunders Co., Philadelphia, 1988, 1, pp. 321–325.
6. Greenspan RH, Sagel S, Mac Mahon J *et al.* – Timed expiratory chest films in the detection of air trapping (Abstract). *Invest Radiol*, 1973, 8, 264.

Dégénérescence bulleuse du lobe inférieur gauche chez un drogué à l'héroïne. F.W.J.M. Smeenk, J. Serlie, E.J. van der Jagt, P.E. Postmus.

ABSTRACT: Un drogué à l'héroïne de 34 ans consulte en raison de douleurs thoraciques causées par le trappage de l'air dans une bulle du lobe inférieur gauche. On note une différence marquée entre la capacité résiduelle fonctionnelle mesurée par pléthysmographie corporelle et par dilution de l'hélium. On a démontré un wash-in et un wash-out lents par scintigraphie de ventilation au Xénon¹³³. La dégénérescence bulleuse est une complication connue de l'utilisation de drogue par voie intraveineuse. Toutefois, ces bulles sont habituellement dans les lobes supérieurs. Les mécanismes causaux possibles sont discutés.

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