Pseudocysts of the Lungs in Kerosene Poisoning
Report of Two Cases

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Accidental petroleum distillate poisonings are not uncommon in the Scandinavian countries.1 Most commonly this takes place as ingestion and is aided by the fact that often these substances are removed from their original containers and put into household utensils, such as drinking glasses, milk bottles, and different types of jars. To make this even worse, these refilled household containers often are left in low places where unsuspecting and thirsty children easily can obtain and swallow the contents.

The first symptoms of ingestion of petroleum distillates naturally come from the gastrointestinal system: severe abdominal burning, nausea, vomiting and diarrhea. Generalized and resorptive symptoms are pain on urination, anemia, hematuria, unconsciousness and convulsions. Further symptoms are shallow respiration and bronchopneumonia, according to Nelson.1

The following two case reports of kerosene poisoning in children will be given and we will discuss the possible origin of the predominant pulmonary complications.

Case 1

A boy of two years, admitted April 17, 1963; no previous diseases and normal development, no pulmonary symptoms. One half hour before admission, the boy had swallowed a mouthful of kerosene from a mineral water bottle, most probably only a single mouthful.

At the time of admission, the patient was not seriously ill, his temperature was normal, but he exhibited an unproductive cough; no rales were heard over the lungs. In a trial to avoid generalized symptoms, a stomach washing was performed. After this procedure, x-ray films of the lungs showed normal findings.

After 12 hours in the ward, his temperature rose to 103°F. but still with normal findings on auscultation. Gradually in seven days the temperature descended to normal values without the use of antibiotics. During hospital stay, the cough persisted and films of the chest were repeated April 24 (Fig. 1). Now a slight infiltration, patchy and irregular, had appeared in lower left lobe less pronounced along the right heart ridge.

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On May 2, bronchography was performed on the left side and by this method the bronchi in the posterior part of the lower lobe were found displaced and compressed by a multilocular, airfilled cyst sized 35 x 25 mm. lined with small amounts of bronchography contrast material (Fig. 2).

The day after a bronchography, we usually take a new x-ray film to ascertain the result of immediately instituted physiotherapy, and in this picture the cyst was seen at its maximum, situated posteriorly in the lower lobe, measuring in the anteroposterior picture 36 x 17 mm. with a 3 mm. lining. The surrounding areas contained patchy irregular configurations observed previously. In the same roentgenogram, a cyst now was seen in the right lung, measuring 10 x 10 mm. apart from the cardiac contour (Fig. 3).

A follow-up x-ray picture on May 16 showed the infiltration in both lungs regressing, but the cysts were clearly seen to be the same size as earlier.

Other investigations: Weight 12 kg., height 90 cm.; urine contained protein the two first days but this thereafter disappeared spontaneously. Hemoglobin 117 gm./100 ml. Leukocytes maximally 12,000/mm³. Erythrocyte sedimentation rate 24 mm./1 hour. Normal electrocardiogram. Liver function tests were normal. The young patient was dismissed May 20 without symptoms.

He was again admitted on June 10 for check-up examination; at home he had only scarce cough. On the x-ray film on June 11 the left cyst was clearly outlined, air-filled, with a thin cyst-wall; it measured 34 x 18 mm. The surrounding lung structures were normal. The small right cyst was not visible, but could be traced by tomography.

On subsequent examination on September 17, 1963, normal lungs were seen on the x-ray film and also by tomography. There had been no symptoms in the intervening period.

SUMMARY

Boy of two years with fever and cough after peroral kerosene ingestion developed cystic changes in both lower lobes of the lungs. These changes disappeared in a five-month period.

CASE 2

A boy of two years, with normal development and no prior illness, was admitted to the ward May 24, 1963 one hour after having ingested...
half a cup of kerosene. He was instantaneously cyanotic and dyspneic. On admission, the boy was not in serious condition, and no cyanosis or dyspnea was observed. He was normal on examination and his temperature was 98°F. X-ray film of the lungs showed patchy appearance in lower left lobe, mostly behind the left ventricle of the heart. Lateral tomography (Fig. 4) taken May 27 showed small cystic translucencies posterobasally in the left lower lobe. During the admission, there was no pulmonary symptom or fever.

Other investigations: Weight 15.9 kg., height 93 cm., hemoglobin 12.5 gm., 100 ml. leukocytes 18,400/mm³ and erythrocyte sedimentation rate 14 mm.

The child was taken home May 30. He was seen as an out-patient and two x-ray films were taken later, June 11 and August 21, 1963. On
both occasions, no residual signs of the earlier infiltration were found.

Summary

Boy, aged two years, with a history of cyanosis and dyspnea after ingestion of kerosene. On x-ray examination, small cystic changes were found in the left lower lobe. These changes disappeared spontaneously in a fortnight.

Comments

Our first patient was in pulmonary distress more than a week and the roentgenologic changes disappeared in three months. The other patient was an instance of immediate distress in which the pulmonary signs disappeared in 14 days with no later symptoms.

The first description of cysts in the lungs seen after pneumonia in a child seems to be from 1927. Later descriptions tend to differ between real lung cyst, and the so-called pseudocyst or pneumatocele. The latter are acquired and of obscure origin, seen from both a clinical and a radiologic standpoint. Regarding the pathology Zadek and Riegel in their monograph distinguished between the real cyst and the pseudocyst. The former is lined with epithelium and accordingly without tendency to regression; it is often complicated by infection, pneumothorax, hemoptysis and sometimes malignancy. The pseudocyst is seen as a complication of pulmonary infections, lasts a couple of months and disappears spontaneously. It is most often seen in early infancy and is without complication. It is thought that it results from an infectious stenosis in the small bronchi; it could then emerge as a small localized functional emphysema or as a space filled with air in surroundings destroyed by infection.

The differential diagnosis is between lung abscess and a real cyst. The clinical development and the x-ray pictures should be decisive.

In both cases here mentioned the diagnosis seems clear from the clinical appearance, the history, the x-ray findings and the course. It may demand some close scrutiny to suspect and find a pseudocyst and this might explain the fact that it is seldom described.

The radiologist distinguishes two types of pulmonary affections in kerosene poisoning; the aspiration type with infiltration of the lower lobes and the edematous type with confluent bilateral perihilar infiltrations.

It is very probable that our cases are instances of the first type, but with consequent chemical destruction of lung tissue. The etiology seems to be also clear: children will inspire deeply when they feel the strange unpleasant fluid in their mouths in contrast to adults who are more apt to swallow immediately after feeling that they have the fluid too far back in the mouth to spit it out again.

References


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