HISTOPLASMOSIS — CAVE DISEASE

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Histoplasmosis is caused by the fungus *Histoplasma capsulatum,* which is primarily a parasite of the reticulo-endothelial system and is rarely found extracellularly in tissue. It resembles coccidioidomycosis in that it is a highly infectious mycosis that usually results in a primary, acute, benign pulmonary disease and rarely in a progressive, chronic malignant disease. The intracellular nature of the fungus in the reticulo-endothelial system is similar to that of Toxoplasma and Leishmania, and the clinical picture of progressive histoplasmosis has features resembling those seen in kala-azar.

It is not within the scope of this article to give a detailed description of the disease. Readers are referred to *A Manual of Clinical Mycology* by Conant *et al.*[1] for an

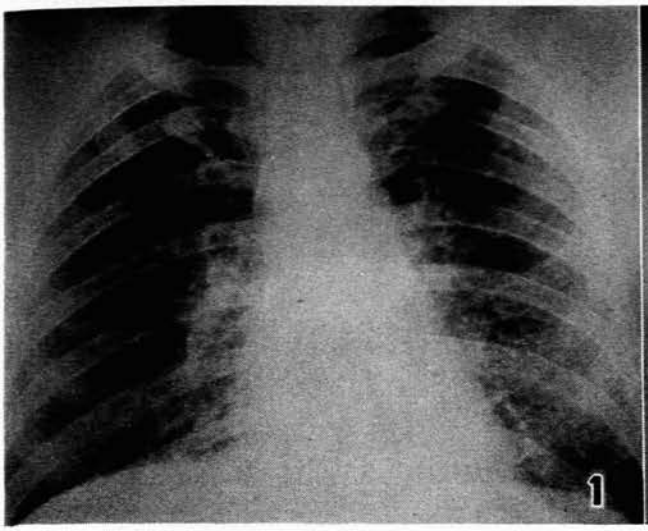


Fig. 1. Case 1. Showing mottling in both lung fields.

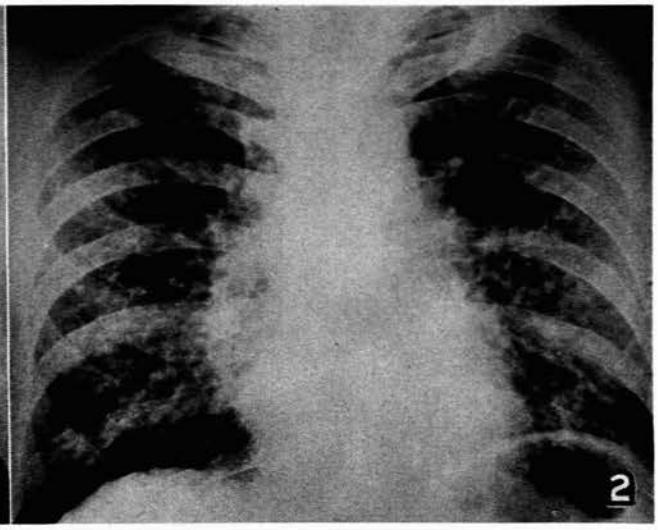


Fig. 2. Case 2. Showing a coarse miliary pattern throughout both lung fields.

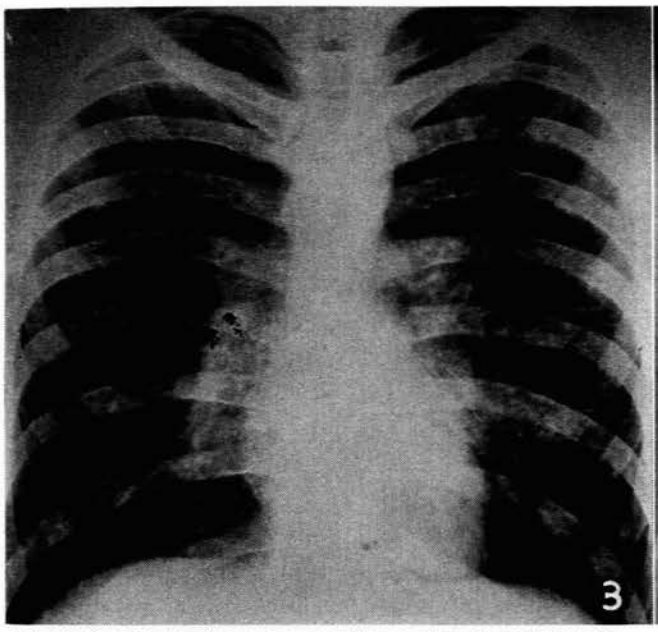


Fig. 3. Case 3. Showing a coarse miliary pattern throughout both lung fields.

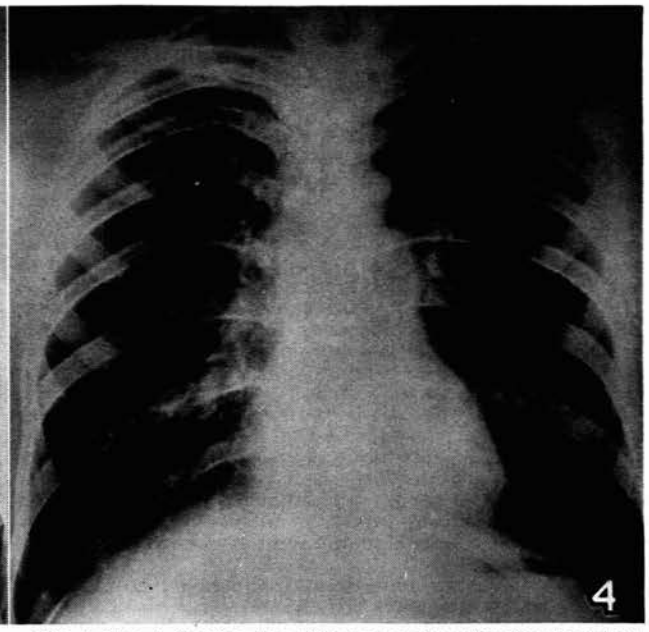


Fig. 4. Case 4. Showing fine miliary areas of calcification throughout both lung fields and calcified left hilar glands.

excellent description of all aspects of the disease.

The following series of cases with pulmonary manifestations is presented:

Case 1

Mr. R.B.C. reported for X-ray examination in September 1957 after a bout of illness that was thought to be influenza. He gave a history of having explored some caves in the Skurweberg range, near Pretoria. The chest radiograph revealed mottlings throughout both lung fields (Fig. 1). At a follow-up examination made in July 1958 the lung fields were not quite clear, but the patient had entered various caves in the interim and had probably been reinfected. Histoplasmin skin test and complement-fixation tests were positive.

Cases 2 and 3

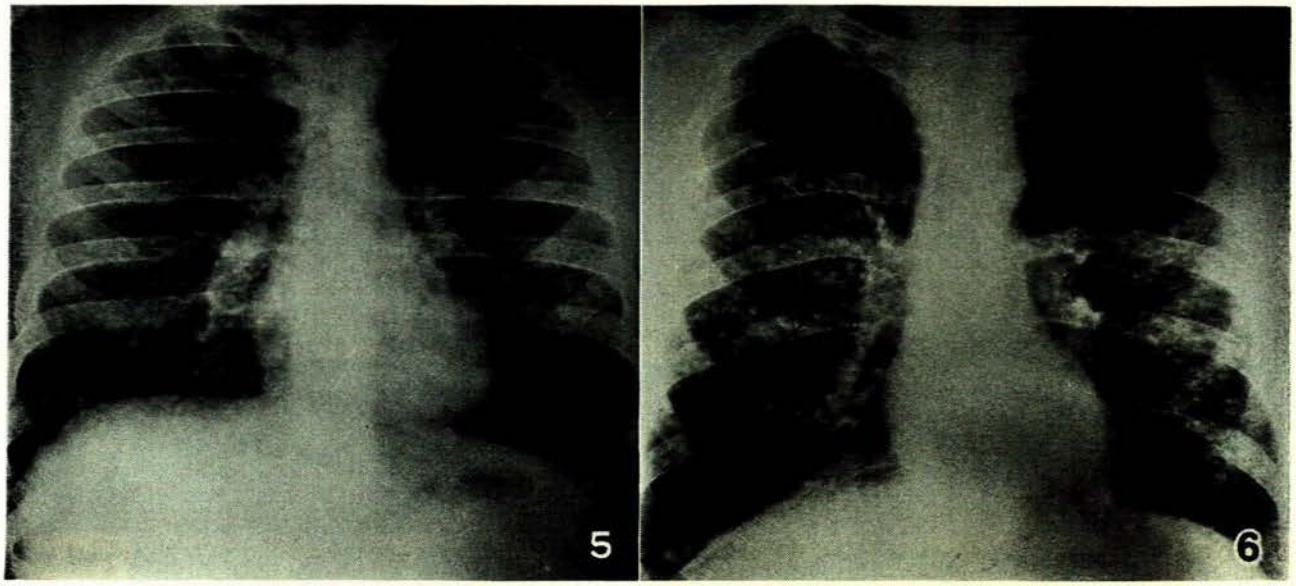
At the time of the first examination Mr. R.B.C. reported that two of his friends had accompanied him into the caves. Both were X-rayed in September 1957 and both showed a coarse miliary pattern throughout both lung fields (Figs. 2 and 3). At a control re-examination of one of these patients made in October 1958 the lung fields had cleared completely. The other patient could not be traced.

Case 4

Mr. G.B., a young adult, was X-rayed in December 1962. He gave a history of having played in some caves near Potchefstroom as a child about 20 years previously. His parents had told him that he had been 'acutely ill'. The X-ray showed fine miliary areas of calcification throughout both lung fields, and calcified hilar glands on the left (Fig. 4).

Cases 5 and 6

In April 1963 three more cases reported for X-ray examination. Messrs. J.F.J. aged 25 years and L.P.S. aged 41 years



Figs. 5 and 6. Cases 5 and 6. Both showing a massive coarse miliary pattern throughout both lung fields.

have identical histories, symptoms and clinical signs and are therefore reported together.

About the middle of March 1963 these two men visited the Cango Caves area of the Cape Province to explore, on behalf of the local administration, for subterranean waters in certain caves in that neighbourhood. They spent 4 - 6 hours a day in the caves for 4 days, and explored 3 caves, namely: (*a*) Melville's Pot cave—damp but no standing water; bats and manure present, but otherwise clean. (*b*) Spiesgat cave—dry, dusty and dirty; bats and manure present. (*c*) Marcus cave—very damp and dirty; bats and manure present; had to walk through mud; subterranean running water present.

On about 25 March, within a day or so of each other and about 1 week after entering the caves, both men developed severe rigors in the morning, followed by headaches and temperatures in the evening and mental confusion in the night. They were seen by a doctor, who diagnosed influenza.

The worst symptoms persisted for about 3 days and then improved, but the patients had not recovered completely at the time of examination on 1 April 1963. Prominent symptoms during the illnesses were as follows: (i) rigors, (ii) temperatures in the evenings, (iii) occipital headaches radiating to back of neck and the ears, (iv) vertigo, (v) sweats, (vi) loss of appetite, (vii) constipation and (viii) dry cough in the early stages.

J.F.J. was given an antimalaria injection, but he maintains it aggravated his symptoms considerably.

Clinical examination on 1 April revealed: (i) no temperature, (ii) no adenitis, enlarged liver or spleen, (iii) no jaundice, (iv) no chest signs of note, (v) blood pressure—L.P.S. 110/80 mm.Hg; J.F.J. 104/60 mm.Hg.

J.F.J. had noticeably dark rings under his eyes, and both men stated they had lost about 10 lb. in weight in the previous 10 - 12 days—L.P.S. from 164 to 154 lb. and J.F.J. from 175 to 166 lb. Both men refrained from going off duty, although they felt shaky and giddy.

Histoplasmin skin test. Carried out on 1 February 1963. J.F.J.—wheal approximately 5c. in size after 24 hours; still present after 48 hours. L.P.S.—negative after 24 hours and 48 hours.

Urine. Normal but concentrated in both men. J.F.J. complained of dysuria for some days.

X-ray findings. Both men showed a massive coarse miliary pattern throughout both lung fields (Figs. 5 and 6).

Case 7

The third member of the party, Mr. J.J.B., gave the following story: From 9 March to 16 March he explored inside the Marcus cave, but he only stood in the entrance to the Stassen and Melville caves, and did not enter the Spiesgat cave at all. On Friday morning 29 March he had headache radiating from his ears to the occipital region. On Sunday 31 March he experienced discomfort in the epigastric region, and then felt as though he had 'flu,' with (i) rigors on Monday, (ii) sweats, (iii) dizziness++, (iv) dyspnoea, but no cough, (v) bowels normal. His weight fell from 189 to 182 lb. The blood pressure was 130/80 mm.Hg. The *histoplasmin skin test* performed at Pretoria on 4 April, was negative.

X-ray findings. There was a fine miliary pattern and the lung changes were less marked than in the previous two patients, J.F.J. and L.P.S. (Fig. 7).

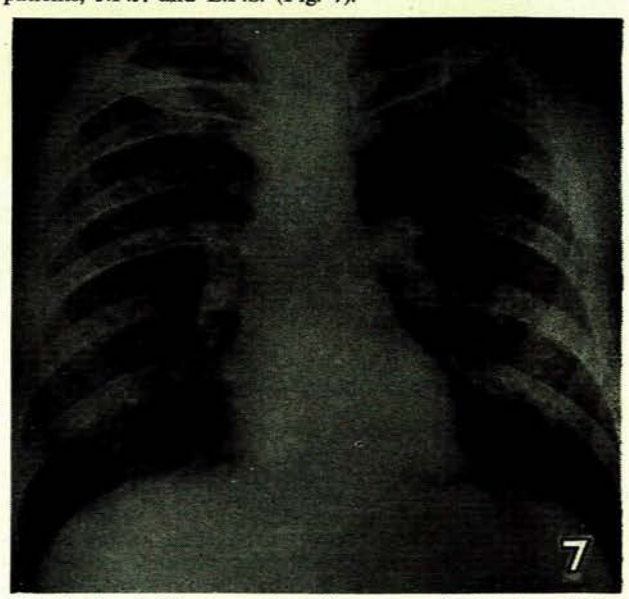


Fig. 7. Case 7. Showing a fine miliary pattern in both lung fields.

CONCLUSIONS

Histoplasmosis is reported as a definite entity with a typical pattern in the lung fields. Lung changes may be

considerable even when blood and skin tests are negative.

Depending upon the duration of exposure, the lung changes vary from a fine to a very coarse miliary pattern. These changes tend to clear within a relatively short time without any specific treatment.

Over a period of time miliary calcification may develop. It is postulated that a large percentage (if not all!) of the so-called 'healed (calcified) miliary tuberculosis' previously reported were in fact cases of histoplasmosis.

Practitioners in areas where there are caves known to be infected should always be on the lookout for this disease, especially in children and other 'explorers'.

No cases have been reported from active working mines, but, according to Prof. J. F. Murray,[2] of the South African Institute for Medical Research, histoplasmosis is commonly found in abandoned disused mine shafts.

SUMMARY

Seven cases of histoplasmosis involving the lungs are described. These cases were chest manifestations in patients who had explored caves. The similarity to certain types of lung tuberculosis is pointed out. X-rays of the chests are submitted.

REFERENCES

1. Conant, N. F., Smith, D. T. and Baker, R. D. (1958): *Manual of Clinical Mycology*, 2nd. ed. Philadelphia: Saunders.
2. Murray, J. F. (1963): Personal communication.