create a distracting force on the fragments. This could easily give rise to a local haematoma. Hopps (1953) suggested that frequent bacteraemia can take place without any symptoms. In the present case, therefore, local haematoma followed by haematogenous infection could be the mode of origin of osteomyelitis. The delay in operation does not appear to cause any harm, as excision of the diseased bone was followed by complete cure in all the five cases recorded. This can be explained by the localized nature of the lesion. Removal of the sesamoid gives a permanent cure.

My thanks are extended to Mr. E. Mervyn Evans, under whose care the patient was admitted.

M. M. ROWE, F.R.C.S.,
Senior Registrar in Orthopaedic and Traumatic Surgery,
Morriston Hospital, Swansea.

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Allergic Pulmonary Infiltration Due to Nitrofurantoin

An increasing number of drugs are known to be associated with allergic reactions manifested by eosinophilia and transient pulmonary infiltration of the type originally described by Löffler (1932). A case due to nitrofurantoin ("furadantin") has recently been described (Israel and Diamond, 1962). We now record a second example of this association.

CASE REPORT

The patient, a 54-year-old physician, had previously suffered from hay-fever and allergy to sticking-plaster but not from asthma. In 1957 he suffered an attack of cystitis, for which he received nitrofurantoin 100 mg. six-hourly without ill effect.

In August, 1962, he developed a further attack of cystitis and received nitrofurantoin four-hourly for four days. On the evening of the fifth day he developed a fever with shivering, a dry cough, and slight shortness of breath. The next morning his own doctor noted rales at both bases but no bronchospasm. He was treated with penicillin and streptomycin, and improved rapidly. Two weeks later his cystitis recurred and again nitrofurantoin was given. One hour after taking the second dose of 100 mg. he rapidly developed symptoms similar to those of the previous episode and consisting of shivering, fever, difficulty with breathing, and a cough with a small amount of whitish sputum. He was admitted to hospital the same afternoon and on examination his temperature was 101° F. (38.3° C.). At both bases loud rales could be heard as high as the angle of the scapula. There was no bronchospasm, cyanosis, or pleuritic pain, but he appeared to have difficulty in breathing.

He was initially treated with tetracycline, but by the following morning the whole episode appeared to have abated, the temperature being normal and the lungs practically clear on auscultation.

Investigations at this time showed: haemoglobin 12.9 g./100 ml.; leucocytes 6,800/c.mm. (neutrophils 60%, lymphocytes 16%, monocytes 4%, eosinophils 20%). The chest radiograph (see Fig.) showed diffuse mottling in both lower zones.

The tetracycline was continued for five days, as we were not aware of the association of Löffler's syndrome with nitrofurantoin. His recovery was virtually complete on the second day after admission and a chest radiograph on the fifth day was normal. The eosinophilia also subsided to 2% of a total leucocyte count of 11,000/c.mm. No pathogens were isolated from the sputum, and viral antibody studies showed no evidence of recent infection.

Radiograph showing diffuse mottling in both lower zones.

He was discharged with instructions to avoid contact with nitrofurantoin. The cause of the recurrent cystitis is under investigation.

COMMENT

Israel and Diamond were able to prove that nitrofurantoin was the causative factor in their case by reproducing the illness with a small dose of the drug. We are not able to do this, as the patient was anxious to return to his medical practice without delay. There can be little doubt about the cause of his illness, however, which was clearly allergic in origin and closely followed nitrofurantoin on each occasion. The increasing speed of onset with each episode noted by Israel and Diamond was also apparent.

Reactions to nitrofurantoin are not common, as the drug is widely prescribed and reports of allergy are few. Circulatory collapse occurred on one occasion (Fisk, 1957).

Other drugs known to cause pulmonary eosinophilia include *p*-aminosalicylic acid (Waring and Howlett, 1952), penicillin (Reichlin *et al.*, 1953), and mephesisin (Rodman *et al.*, 1958).

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D. C. F. MUIR, M.B., B.S., M.R.C.P.
J. A. STANTON, M.B., B.S.

Middlesex Hospital,
London.

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