SHORT REPORTS

The normal chest radiograph in bronchial carcinoma

The "early" diagnosis of bronchial carcinoma is often too late to save the patient, and improved clinical practice and better diagnostic methods are needed. The best single diagnostic tool remains the chest radiograph and our purpose here is to examine some of its limitations. These are determined by (a) the size of the lesion, (b) its location, and (c) the experience and number of readers assessing the radiograph. Tumours as small as 0·3 cm across may be detected in rib-free lung fields, but often tumours under 0·6 cm are not seen. In lungs obscured by bony or mediastinal shadows tumours as large as 2 cm may remain undetected.1 In patients of 50 and over the mean percentage of unobscured lung is only 24·5%.2 Clearly additional views—for example, lateral projections, penetrated postero-anterior films, and films taken in expiration—will yield further information, but such pictures are not normally undertaken on initial assessment. Routine lateral films are wasteful and are only indicated when chest disease is suspected or in screening patients aged 40 years or more.3

The incidence of normal chest radiographs in bronchial carcinoma has received little attention. This has been reported as "very occasional" and as 0·1-2%.1 Over the past six years we have seen 15 patients with histologically proved bronchial carcinoma presenting with what were originally regarded as normal chest radiographs. These patients represent about 1·7% of the 900 patients with bronchial carcinoma seen during this period. We examined this problem further by reviewing these 15 radiographs.

Methods and results

The radiographs were mixed with another 15 from patients of about the same age who had undergone bronchoscopy because of suspected carcinoma and had been followed up for two years. Since no abnormality materialised in this time, we have good evidence that the second group was free of tumour. These 30 radiographs were viewed in random order and independently by a senior chest physician from another area, a senior thoracic surgeon from another area, and a senior radiologist with a special interest in chest radiology. These readers were told that some of the 30 films they were viewing were from patients with proved bronchial carcinoma, but that the remainder were known to be normal. They were asked to indicate whether there was a certain abnormality or a suspicious abnormality and to indicate its location.

Carcinoma was correctly diagnosed in six of the possible 15 cases by readers 1 and 2 and in three cases by reader 3. False-positive assessments were also made—in one case each by readers 2 and 3 and twice by reader 1. The readers usually identified different patients and in only one case did all three correctly diagnose the same carcinoma. In another two patients two readers agreed on an abnormality in the right hilar area, but only one of these patients had bronchial carcinoma. A similar analysis for suspicious abnormalities on the radiographs showed broadly similar results. The effects of dual independent reading were tested by variously combining the correct assessments. Readers 1 and 2 together diagnosed 11 of the 15 carcinomas. Readers 1 and 3 diagnosed 7 of the 15 cases, as did readers 2 and 3.

Comment

We suspect that many clinicians who do not personally interpret chest radiographs or perform bronchoscopies do not fully appreciate the limitations of these procedures. Our purpose here is to draw attention to the limitations of the standard chest radiograph in detecting bronchial carcinoma. Chest radiographs should, whenever possible, be read by two people, and when there are suspicious symptoms or signs additional investigations must be undertaken despite an apparently normal chest radiograph.


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Leptospirosis as a cause of erythema nodosum

Manifestations of leptospirosis are protean, but it has never been described in association with erythema nodosum. We report such a case.

Case report

An 8-year-old girl was admitted to hospital with a 24-hour history of pain in the right knee that precluded weight-bearing. Ten days previously she had been bitten on the right buttock by a dog. She was febrile (39·5°C), with a swollen, painful right knee and a small scar on the right buttock. Next day tender, raised erythematous areas developed on both shins. She remained febrile, and her sleeping pulse rate was 132/min. The knee was no longer painful. During the next week she improved; the temperature settled, sleeping pulse returned to normal, and the lesions on the shins slowly disappeared.

Investigations on admission showed: haemoglobin 13·g/dl; white cell count 10·109/l (10 000/mm³), normal differential; erythrocyte sedimentation rate (ESR) 13 mm in the first hour (Westergren); throat swab, negative on culture; antistreptolysin O (ASO) titre 170 Todd units; tine test result repeatedly negative; radiographs of chest and right knee normal; urine, 20-25 leucocytes/high-power field, protein + +, sterile on culture.

Four days after admission the acute-phase leptospiral antibody complement fixation titre was 1/40, the ESR was 68 mm in the first hour, and urine showed scanty leucocytes and protein + +. Liver function studies showed nothing abnormal. The ASO titre two weeks after admission was 250 Todd units, and the titre of the convalescent-phase complement-fixing antibodies to leptospiral infections was 1/320. Agglutination of Leptospira canicola was positive in dilution of 1/1000.

Discussion

Initially the diagnosis was uncertain. Acute rheumatism was excluded in the early stages because of a normal ESR. Since leptospirosis is rife among dogs in Liverpool this condition was suspected. Leptospirological infections may present as feverish illnesses, arthralgias, various rashes, lymphadenopathy, aseptic meningitis, and jaundice.1-3 There is a world-wide distribution of leptospirotic serotypes, and infections may follow contact with an environment that has been infected by animal tissues and urine. Entry to the body is usually through mucous membranes and damaged skin. Leptospirae are not found in saliva, and animal bites are rarely causative.1

In the summers of 1942-4 in the USA an outbreak of Fort Bragg (preclinical) fever occurred among troops, about 40 cases a year being diagnosed. The patients presented with fever, raised erythematous areas over the pretilial regions, and splenomegaly. The infecting agent was shown to be a Leptospira of the autumnalis group.4

Although there was a small rise in our patient's ASO titre, the illness was probably due to L canicola with associated erythema nodosum. Classically erythema nodosum is described as raised erythematous areas over the pretilial regions, which are painful to