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## CIVILIAN MASS RADIOGRAPHY

Mass miniature radiography was introduced into the Royal Navy in 1939, and by 1941 Dudley<sup>1</sup> was able to report the results of 18,000 examinations. This and many similar publications from all over the world showed clearly the value of the new technique and the problems it raised. After such publicity the idea caught the public fancy and was approved by the Ministry of Health, but it was not until 1942 that a few official miniature radiography sets were produced for civilian use. The first of these went to the Medical Research Council, which has now published a report<sup>2</sup> on the first 23,000 examinations made with this instrument. About half of the report deals with the technique and organization of a miniature radiographic survey; this section is excellent and will undoubtedly become a standard work of reference on the subject. The account of the handling of apparatus, processing of films, and positioning of the patient is particularly good. The recommendations on the disposal of abnormal cases will, however, hardly meet with such general approval. It appears that in doubtful cases the medical directors of the unit must often decide from one interview and radiograph not only whether the subject has pulmonary tuberculosis but also whether the disease is active. Anyone who has had experience in a chest clinic will realize the absurdity of this suggestion; yet it is one which has often been made in the past, and even the official publications have implied that it should be the duty of the mass radiography unit to distinguish, in certain cases, between active and inactive pulmonary tuberculosis. In view of the overwhelming evidence that the majority of early tuberculous lesions in the lungs are symptomless, it is clearly most dangerous to decide on such slender evidence whether a newly discovered tuberculous lung lesion requires special action or not. The only safe course is to keep all patients with such lesions under close observation. The present official constitution of a mass radiography unit places a clinician in charge but does not give him control of the observation and investigation of suspects. Such an arrangement encourages the clinician to commit himself to a diagnosis, and even prognosis, on the strength of one interview and an x-ray film of the chest. Certain of the suggestions made in this report concerning the treatment of newly detected cases at a chest clinic invite similar criticism. It is stated, for instance, that in some cases a single re-check after 6 months may be all that is necessary to establish that a lesion is healed. But this makes no allowance for the rapidity with which some of these apparently healed lesions deteriorate. Even more reveal-

ing is the statement that "the present shortage of institutional beds makes it specially desirable to reduce as far as possible the number of cases referred for assessment." It was obvious 5 years ago that the introduction of mass radiography would bring to light a large number of cases requiring hospital observation for diagnosis, and it is disquieting that the shortage of suitable beds is, if anything, more acute now than it was then—in spite of full State control of the medical and nursing services.

The Medical Research Council's report concludes with statistical data on the incidence of tuberculosis and other pulmonary lesions in the persons examined. These figures are similar to those obtained in other mass miniature radiographic surveys. Although such statistics are interesting they throw no light upon the most important problem of all—the fate of the symptomless tuberculous lesion. An increasing number of such lesions are being discovered by modern diagnostic methods, and until the question is answered we shall be no nearer to the solution of the greater problem of the treatment of early pulmonary tuberculosis. If mass miniature radiography is to answer this question it must be used scientifically, as a diagnostic instrument, by the clinicians who are going to direct the observation, diagnosis, and treatment of the patients, and who will continue to observe them for months and even years until the research is complete. But, at present, mass radiography sets have been distributed to various local authorities, and each has become the centre of an independent unit. There is no general agreement about the procedure for the disposal of suspected cases: some advocate that the patients should be sent to their private doctors; others, that they should go direct to chest clinics, and so forth. In these circumstances an efficient survey of the fate of the patients will be extremely difficult if not impossible, and will inevitably lack the element of personal observation which is so important in research. Science does not lend itself to bureaucratic methods, and a clinical inquiry cannot be reduced to a matter of filling in forms.

In the Services the position seems more hopeful, and they have the undeniable advantage of dealing with a disciplined population. Trail and others,<sup>3</sup> in a recent survey of 250,000 miniature radiographic examinations in the Royal Air Force, state that an attempt was made to keep tuberculous suspects under observation, at least for 2 to 3 months. The results prove the value of this course, for 13% of the male and 15% of the female suspects developed active disease. But a short-term policy of this kind is not enough, and Trail and his colleagues are forced to admit that they have not information of the after-histories of all persons examined. By far the most ambitious attempt has been made by the Senior Service, which was also the first to adopt mass radiography. In 1939 units were installed at the three principal naval depots; all persons passing through the depots were examined, and every man in the Navy passes through one or other of them once in 3 years, when his ship pays off. Arrangements were made for the observation of suspects under the same medical control. All doubtful cases were admitted to hospital, where full clinical investigation enabled a preliminary

<sup>1</sup> *Proc. roy. Soc. Med.*, 1941, **34**, 401.<sup>2</sup> *M.R.C. Spec. Rep. Ser. No. 251*, 1945.<sup>3</sup> *Brit. J. Tuberc.*, 1944, **38**, 116.

assessment to be made in about 10 days. Those who had lesions of uncertain stability were given selected shore service, where they could be kept under supervision; they had adequate rations, suitable employment, and abundant rest and leave. Medically they were seen as out-patients and admitted to hospital for repetition of investigations at intervals of 2 to 3 months. Brooks,<sup>4</sup> in a preliminary survey of this research in 1944, recorded that over half a million men and women in the Navy had been examined by miniature radiography: 2,911 sailors had minimal lesions in the lungs, and about 1 in 6 of these proved to be active; in a further 1,826, or 63%, the stability of the lesions was uncertain, and these were observed as described. The thoroughness of this investigation is shown by the fact that some of these cases had been observed for 2 years at the time of reporting: 191, or about 9.5%, of these suspects developed active tuberculosis while they were being watched; the majority of them relapsed during the first year. Thus it is clear that the future of over half the patients with minimal tuberculous lesions in the lung cannot be predicted after one examination, or even after a period of observation in hospital. At least one in ten will subsequently develop active tuberculosis, and if this is to be treated promptly the patient must be kept under the closest surveillance. The far-sighted research in the Royal Navy is doing a great service by providing vital information on the fate of early tuberculous lesions; it also ensures prompt treatment for naval personnel who develop active disease, and it has enabled many men to be retained in the Service who might otherwise have become tuberculous pensioners on the strength of an x-ray examination alone. With this model before us it is regrettable that we civilians should still have to ask the question: Is mass miniature radiography merely to be regarded as an interesting toy, with a useful propaganda value, or is it to be used as an instrument of scientific research?

## IRIDOCYCLITIS

Iridocyclitis is one of the more common inflammations of the eye and is responsible for much visual impairment and a fair amount of blindness. The causes are many, but there is little clear knowledge of the relative significance of each. A time-honoured classification includes syphilis, gonorrhoea, tuberculosis, and rheumatism, but of late such factors as sarcoidosis, brucellosis, and various clinical syndromes have claimed attention. Of the syndromes, that named after Behçet is perhaps the most clear-cut. Recurrent hypopyon has been known to ophthalmologists for many years, but it was Behçet—a dermatologist—who pointed out the association of this form of iridocyclitis with recurrent aphthous ulcers of the buccal mucosa and herpetiform or aphthous lesions of the genitalia. The least constant in this triad are the eye symptoms, which, indeed, may range from recurrent conjunctivitis, corneal ulceration, and iritis to hypopyon uveitis; occasionally optic atrophy has also been observed. A variant in the skin condition is pointed out by Foss,<sup>5</sup> one of whose

cases showed pyoderma and erythema nodosum. That the condition may be allergic is suggested by the fact that in his patient an attack was precipitated by staphylococcal vaccine. Recurrent hypopyon appears to be more common in men.

Iridocyclitis may be of little ultimate significance to the patient, or it may cause blindness. Essen-Möller<sup>6</sup> found that 42% of his 240 cases of chronic iridocyclitis recovered completely, and 32% went on to total or subtotal blindness. His careful analysis of the aetiological factors in his cases showed tuberculosis to be present to a significant extent in chronic iridocyclitis, as also in sclero-keratitis, but not in acute iridocyclitis and choroiditis. Characteristic of these difficulties in assessment is the concept of "pseudo-tuberculosis" applied to such conditions as sarcoidosis and uveo-parotid fever, which account for a certain proportion of cases of iridocyclitis. The readiness with which clinicians will ascribe a nondescript reaction to tuberculosis varies in different countries. On the Continent tuberculosis is favoured as a cause of iridocyclitis; in this country, "rheumatism." But in acute rheumatic fever iridocyclitis is a curiosity, and chronic rheumatism includes many ill-defined conditions. It was tempting to blame focal sepsis when the fashion ran high. In drawing attention to iridocyclitis in six cases of Still's disease observed at the ophthalmic department of the Finsen Institute in Copenhagen, Blegvad<sup>7</sup> stresses the fact that both conditions are rare in children. He therefore regards the concurrence of the two not as a coincidence but as a special form of Still's disease. Still himself never mentioned iridocyclitis in his cases. Blegvad found 20 similar instances out of a series of 896 children with polyarthritis observed in the State and communal hospitals of Denmark during 1929-39. Franceschetti and Brocher<sup>8</sup> state that this type of iridocyclitis is characterized by the formation of a band-shaped opacity in the cornea. They classify rheumatic affections in relation to iridocyclitis under the two main headings of (1) infective rheumatism, and (2) non-infective rheumatism. They divide the acute forms of infective rheumatism into those which are free of ocular complications, and those in which there are rheumatoid reactions—for example, in gonorrhoea, erysipelas, dysentery, smallpox, where indeed iridocyclitis is not rheumatic but part of the systemic infection. In the chronic forms iridocyclitis is common in what they describe as primary chronic polyarthritis, and in spondylarthritis; it is present in some cases of Still's disease, but has not been observed in Felty's syndrome—Still's disease in adults with leucopenia and occasional yellow-brown pigmentation of the unexposed skin. As the chronic, non-infectious forms of rheumatism are so common, it is difficult to decide whether the eye changes seen in the sufferers are no more than a coincidence.

It appears, then, that only three rheumatic affections have to be considered in iridocyclitis: primary chronic polyarthritis, mainly in women; spondylarthritis ankylopoietica, mainly in men; and Still's disease. A link between rheumatism and iridocyclitis is suggested by such

<sup>4</sup> *Lancet*, 1944, 1, 745.

<sup>5</sup> *Acta ophthalmol.*, 1941, 19, 293.

<sup>6</sup> *Acta ophthalmol.*, 1942, 20, 97, 121.

<sup>7</sup> *Ibid.*, 1941, 19, 219.

<sup>8</sup> *Schweiz. med. Wschr.*, 1944, 74, 299.