

reported before the introduction of antibiotics (Lockwood 1921, Russell 1929, Grove 1930), but are not mentioned in standard texts (Maingot 1961, Rains and Capper 1968). That a change in presentation has taken place since antibiotic treatment was introduced is well documented. Gerwig and Blades (1956) pointed out that the onset may be insidious, and that when the organisms in the abscess escape antibiotic control the clinical effect may be severe. They did not recognise that the sterilising effect may last months or years, and that subsequently the patient may present with a mild or moderately severe illness. There is the obvious temptation to treat such a condition conservatively, possibly without recognising the diagnosis. The outcome is years of ill-health with repeated or continuous vague pain associated with unexplained fever and anaemia, and, not infrequently, supposed mental instability. In the four present cases, five abscesses had been present for three years, ten years, one and twelve years, and three months. The last case was diagnosed early, partly because of our new awareness of the condition in chronic form, and partly because the illness ran a subacute rather than a chronic course: the abscess was chronic in the pathological sense.

The bacteriological findings in this condition have altered. In earlier series (Barnard 1908, Whipple 1926, Beye 1932, Ochsner and Graves 1933) the infecting organism was single for any particular abscess, and was a coliform bacillus in 40%, a streptococcus in 40%, and a staphylococcus in 20%. More recent series (Gerwig and Blades 1956, Wetterfors 1959, Carter and Brewer 1964) have revealed mixed cultures mainly of intestinal organisms, but with staphylococci predominating. Our cases confirm this, except that case 2 was not a mixed infection. The findings in this case were interesting in that *Staphylococcus aureus* was cultured, with identical antibiotic sensitivities, from each of six abscesses over ten years.

Like the presentation and bacteriology, the sub-diaphragmatic space involved has altered. In 1933 the commonest site was the right superior posterior space, whereas now the commonest sites are the anterior superior spaces—right and left equally (Gerwig and Blades 1956). The reason for this change is not clear.

In the present cases, screening of the diaphragm was aided by barium meal, with head-down tip, in two of the three left-sided infections.

Needling of the subphrenic space has been condemned as dangerous, threatening spill into the thoracic or peritoneal cavity, and as unreliable (Schwartz 1930, Doherty and Rowlands 1931, Ochsner 1931), but continues to be used. In this small series needling confirmed an obvious diagnosis in one case, and resulted in diagnosis and a ruptured spleen in another. It is not to my mind useful or safe.

The clinical features common to these cases were severe complications attending the original operation, and relatively mild subsequent illness with few physical signs and a raised E.S.R.

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## Preliminary Communications

## AUTOIMMUNE DISEASE AND PARASITIC INFECTIONS IN NIGERIANS

**Summary** Analysis of the pattern of admissions to University College Hospital, Ibadan, Nigeria, shows that diseases in which autoimmune processes are thought to be involved are uncommon in Western Nigeria. The results of a population survey into the prevalence of rheumatoid arthritis in this area support this view. From a review of the published reports, a similar situation may exist in some other parts of tropical Africa. It is suggested that the infrequent occurrence of autoimmune disease in parts of tropical Africa is related to the immunological disturbance produced by multiple parasitic infections.

## INTRODUCTION

DISEASES associated with autoimmunity seem to be uncommon in many parts of tropical Africa. Until recently it has been impossible to draw any conclusions about the prevalence of these conditions in this area because of the paucity of diagnostic medical facilities. The recent establishment of medical faculties with full diagnostic laboratory facilities in several parts of tropical Africa has provided valuable data from which certain tentative conclusions can now be drawn. It is, however, to be anticipated that considerable local variations will be found in the prevalence of autoimmune diseases between some of the ecologically different regions of this vast area.

Review of the published reports suggests that cases of the connective-tissue diseases are rarely seen among the indigenous population of many parts of tropical Africa. Cases of systemic lupus erythematosus have been reported from Senegal,<sup>1</sup> Uganda,<sup>2</sup> and the Congo,<sup>3</sup> but the infrequent occurrence of this condition in tropical Africa has been commented upon on a number of occasions.<sup>4-5</sup> An African case of scleroderma has been reported,<sup>6</sup> but both scleroderma and polyarteritis nodosa seem to be rare in the African. Adult cases of rheumatoid arthritis seen in Kenya<sup>7</sup> and Liberia<sup>8</sup> were thought to be sufficiently unusual to warrant publication as case-reports. Hospital data compiled in Malawi,<sup>9</sup> Uganda,<sup>10</sup> Nigeria,<sup>11</sup> Senegal,<sup>12</sup> and Kenya<sup>13</sup> suggest that rheumatoid arthritis is an uncommon cause of hospital admission in these

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countries. The prevalence of rheumatoid arthritis in temperate climates has been accurately established by means of population surveys but only one survey has been reported from tropical Africa. Examination of 230 individuals attending a clinic in Liberia did not reveal a single case of the disease.<sup>14</sup> Primary thyrotoxicosis has occasionally been seen in the African<sup>15 16</sup> but probably occurs less frequently than in temperate climates.<sup>4</sup> Primary myxœdema and Hashimoto's thyroiditis are even rarer in the African.<sup>4</sup> Although megaloblastic anæmia is common in some parts of tropical Africa, pernicious anæmia has only rarely been seen among the indigenous population.<sup>17 18</sup> Ulcerative colitis<sup>19 20</sup> and myasthenia gravis,<sup>21</sup> are seen in Africans but are uncommon. Primary Addison's disease does not seem to have been reported in an African.

#### MATERIAL AND METHODS

During the course of a study of polyarthritis in Nigerians the case-record and X-rays of all patients with connective-tissue disease admitted to University College Hospital (U.C.H.), Ibadan, Nigeria, during the period 1957-66 were reviewed. Over 70% of the patients were traced, and, whenever possible, appropriate diagnostic investigations were carried out to substantiate the original diagnosis. In view of the unusual features that emerged during this review, the study was extended to include patients with other conditions in which autoimmunity is thought to occur. Occasional cases of these conditions may have been missed, but the figures obtained indicate the pattern of admissions to U.C.H., Ibadan, during the period under review. Further data on the prevalence of rheumatoid arthritis in Western Nigeria were obtained during a village survey undertaken in conjunction with Dr. H. A. Valkenburg and Dr. A. S. Muller of the University of Leiden.

#### RESULTS

The number of patients with autoimmune conditions admitted to U.C.H., Ibadan, during the period 1957-66 were as follows: connective-tissue diseases 66 (rheumatoid arthritis 42, Still's disease 21, systemic lupus erythematosus 2, systemic sclerosis 1); thyroid diseases 20 (figures for 1960-67 only) (primary thyrotoxicosis 19, Hashimoto's thyroiditis 1); other diseases 18 (pernicious anæmia 4, ulcerative colitis 8, myasthenia gravis 6). Thus there were only 104 patients with autoimmune diseases out of a total of 98,454 admissions.

Systemic lupus erythematosus was diagnosed on only two occasions. Neither Sjogren's syndrome nor polyarteritis nodosa was diagnosed, although a few patients with unusual forms of peripheral polyarteritis were admitted. Rheumatoid arthritis was responsible for only 4 admissions per year during the period under review. Patients with rheumatoid arthritis showed a number of unusual features, including an unexpectedly low incidence of seropositivity, and were not typical of the disease as it is seen in patients in temperate climates.

Patients with primary thyrotoxicosis have occasionally been admitted to U.C.H., Ibadan, but primary myxœdema has not been recorded. Colloid goitre is often seen, and a considerable number of these patients come to surgery. Review of a large number of thyroidectomy specimens<sup>22</sup> revealed only 1 thyroid in which the

NUMBERS OF PATIENTS ADMITTED TO U.C.H., IBADAN, WITH RHEUMATOID ARTHRITIS COMPARED WITH EXPECTED VALUES BASED ON FIGURES OBTAINED FOR HOSPITAL ADMISSIONS WITH THIS CONDITION IN ENGLAND AND WALES<sup>23</sup>

Age-group (yr.)	Males		Females		Total	
	Observed	Expected	Observed	Expected	Observed	Expected
15-44 ..	14	50	18	78	32	128
45-64 ..	9	38	1	70	10	108
Total ..	23	88	19	148	42	236

pathological changes were suggestive of Hashimoto's thyroiditis. The incidence of focal thyroiditis in thyroid glands studied at necropsy was found to be lower in Nigerians than in Caucasians.

3 of the 4 patients with pernicious anæmia admitted during the period under review were Europeans—a striking finding, since only a very small proportion of the total number of admissions to U.C.H., Ibadan, are Europeans. A diagnosis of ulcerative colitis is difficult to substantiate in an area where other forms of inflammatory colitis are common but the condition seems to be rare in the population of Ibadan. Patients with myasthenia gravis were occasionally admitted, but primary Addison's disease was never diagnosed.

Many autoimmune diseases show a striking increase in frequency with increasing age. The relatively large proportion of young people in most African populations might therefore be responsible for an apparently low incidence of autoimmune disease in the African. This possibility has been explored for rheumatoid arthritis by comparing the number of patients with this disease admitted to U.C.H., Ibadan, with the number of patients with the condition admitted to hospitals in England and Wales. The number of admissions that would have been expected in a hospital population of the age and sex distribution of that found at U.C.H., Ibadan, was calculated from figures obtained in England and Wales:<sup>23</sup> rheumatoid arthritis was found to account for only a sixth as many admissions to hospital in Western Nigeria as to hospitals in England and Wales (see accompanying table). The large number of medical and social factors influencing the pattern of admissions to hospital renders hospital statistics alone an unreliable indication of the prevalence of a disease in a community. The findings of the population survey into the prevalence of rheumatoid arthritis in Western Nigeria are therefore of interest. The prevalence-rate for definite and probable rheumatoid arthritis was found to be low. This was partly due to the large number of young people in the survey sample, but the prevalence-rate for definite and probable rheumatoid arthritis in subjects aged 34-65 (0.9%) was significantly lower than that obtained in any previous survey in which comparable techniques have been used.<sup>24</sup> Mild X-ray changes of rheumatoid arthritis were, however, seen as often in the Nigerian survey as in previous surveys in temperate climates.

#### DISCUSSION

The present study strongly suggests that diseases in which autoimmune factors are thought to be involved do not occur as often in Western Nigeria as in temperate climates. Review of the limited reports available suggests

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that a similar situation exists in several other parts of tropical Africa. The apparent immunity of the African from autoimmune disease could have a genetic or environmental basis. The common occurrence of systemic lupus erythematosus,<sup>25</sup> thyrotoxicosis,<sup>26</sup> and pernicious anaemia<sup>27</sup> in American Negroes, and of rheumatoid arthritis in Jamaican Negroes,<sup>28</sup> suggests that environmental factors are of considerable importance.

It has been demonstrated on many occasions that the  $\gamma$ -globulin level of apparently healthy Africans is higher than that of healthy Europeans.<sup>4</sup> Recent studies have shown that this increase is due to an increase in levels of IgG and IgM.<sup>6, 29</sup> The occurrence of rheumatoid factor<sup>30, 31</sup> and heterophile agglutinins<sup>32</sup> in a high proportion of healthy members of the community is further evidence of the altered immunological status of the African. The importance of environment in the production of the altered immunological state of the African is shown by the fall in  $\gamma$ -globulin level seen in African students living in England<sup>33</sup> and by the occurrence of lower  $\gamma$ -globulin levels in American Negroes than in African Negroes.<sup>34</sup> The effect of antimalarial therapy on  $\gamma$ -globulin levels,<sup>35</sup> and the correlation of high titres of antimalarial antibodies with some of the altered immunological characteristics of the African,<sup>31</sup> point to malaria as one important environmental factor. There is some evidence that other parasitic infections may also be involved.<sup>36</sup>

It has lately been suggested that the occurrence of endomyocardial fibrosis, and possibly some other diseases, in tropical Africa may be related to the immunological disturbance produced by malaria and other parasitic infections in many of the inhabitants of this region.<sup>32</sup> As a result of the present survey it is postulated that the rarity of autoimmune disease in Western Nigeria, and possibly in other parts of tropical Africa, is similarly related to an altered immunological state produced by multiple parasitic infections since childhood. The manner in which parasitic infections could interfere with the appearance of autoimmune disease remains a matter for speculation. Recent work on immunity to parasitic infections has demonstrated the complex nature of the processes involved.<sup>37</sup> It seems likely that changes in immunoglobulin levels are only one of many immunological abnormalities induced by the parasite. Incorporation of host antigen into the structure of the parasite, recently demonstrated in blood helminths, could be of particular relevance to avoidance of autoimmune disease. Cross-antigenicity between body antigen and parasite-incorporated body antigen could modify the effects of autoimmunity in a number of ways. Incorporation of host antigen by a parasite could lead to the production of tolerance to altered host antigens that would

normally lead to an autoimmune response. Alternatively, parasite-incorporated antigen could be responsible for absorption of autoantibody produced as a result of host-cell damage. Reduction of the sensitivity of the immune mechanism to the factors responsible for the production of autoimmune disease by the massive antigenic stimulus of multiple heavy parasitic infections is an alternative hypothesis that could explain the postulated inverse relationship between parasitic infections and autoimmune disease.

Consideration of a possible relation between parasitic infections and autoimmune disease provides another method of approach to study of this group of conditions. This approach is being further developed.

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## AVERSION THERAPY FOR HEROIN DEPENDENCE

**Summary** Suxamethonium chloride ('Scoline') has been used to produce aversion to the process of preparing for self-injection of heroin. The instruction for self-injection is timed to coincide with the onset of paralysis induced by 30 mg. scoline, and the process is repeated for 5 consecutive days. The aversion therapy is only part of the system of treatment, but the results in ten patients are encouraging. Nine of the patients so treated have been off all drugs for an average of 33 weeks.

### INTRODUCTION

IN view of the rather disappointing results of medical treatment of patients dependent on heroin,<sup>1, 2</sup> any therapeutic procedure likely to improve the prognosis is worth exploring. We describe here an aversion procedure which, as far as we know, has not been reported previously.

In our experience, patients repeatedly claim that the ritual of fixing (i.e., preparation of the injection) and the "needle" (i.e., the actual injecting) are as important as the drug itself, and some asked for intravenous injection of anything, even water. This experience is shared by other workers, and the claim was strongly reinforced when, by chance, we found a patient injecting himself with tap-water from a discarded syringe which he had stolen from the ward.

We have been using apnoea induced by suxamethonium chloride ('Scoline') to decondition alcoholics, following the report by Sanderson et al.<sup>3</sup> but one of us (N. H. R.) suggested that the procedure might be much more relevant to breaking the pattern of intravenous abuse of narcotics.

Dependence on heroin seems to be, at least in part, a learned behaviour<sup>4-6</sup> involving a series of conditioning

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