CHAPTER 11

FILARIASIS

FILARIASIS has been a subject of medical interest in Queensland since the pioneer work of Bancroft on the mechanism of its transmission. In the Pacific Islands it has also been studied and at the outbreak of war considerable knowledge had been gathered concerning the important endemic areas. In a review of entomological research in Australia Mackerras pointed out that in 1934, T. C. Backhouse had confirmed *Anopheles punctulatus* as a vector in New Guinea. It was known that there were at least two sibling species of *Wucheria* affecting man, differing widely in pathogenicity and apparently with different vectors. The nocturnal type of filaria was known to be widespread in New Guinea, but non-periodic forms were present also with a patchy distribution. The Australian forces were not exposed to substantial risk of filaria; though they were in some endemic areas, they were not committed in large numbers to prolonged exposure in the most highly endemic areas. Occasional infections would not cause a serious medical problem, but as the war in the Pacific spread out over wider zones, it was inevitable that the advancing Allied forces should occupy endemic areas and incur greater risks.

The Australian forces were therefore concerned with the possibility of infection in known endemic areas in New Guinea and New Britain. Here the well-known lesions could occasionally be seen in natives, particularly chronic lymphangitis due to the presence of adult worms or embryos, with thickening and dilatation of lymph channels, and oedema, with occasional febrile episodes. Associated with these lesions occurred the various forms of elephantiasis, occasional local abscess formation and chyluria. Embryos frequently could not be found in the blood. In more outlying islands in the Pacific such as the Society Islands, Cook Island, Samoa and Tonga the opportunities of infection were greater. Australian troops were not stationed in these islands, but American troops were, and in January 1944 the question arose whether it was desirable to station in Northern Australia American servicemen who had contracted the disease in Samoa, Tonga or elsewhere. The Combined Advisory Committee on Hygiene and Tropical Diseases was asked to express an opinion on this, and stated that, although it would not be desirable to station such men in Northern Australia, the risk to the civil population was not sufficient to warrant restriction of troop movements. This risk was not likely to be substantial, especially as the men infected showed no symptoms until nine or twelve months after exposure, and almost without exception had no microfilarial parasites in their blood.

Nevertheless the whole question was discussed later in 1944 at a meeting of the Allied Malarial Control Conference in New Guinea. At this meeting Major Backhouse described fully the method by which the filiform larvae developed in the vector mosquito and entered the skin of the human

host. Clinical conditions arising from the irritation of the presence of embryo worms, or of living or especially of dead adult worms in the lymph channels were important, as they suggested the possibility of filaria, even in the absence of microfilariae in the blood. The presence of subcutaneous or muscular abscesses, or of lymphangitis, with or without fever, funiculitis or orchitis might thus be significant, though filaria was not a likely cause. The so-called "tropical myositis", with recurrent abscesses, was probably non-filarial. More suggestive still were such lesions as lymph varices, or lymph scrotum and chylous exudates or chyluria due to obstruction of the thoracic duct. Backhouse recounted his own previous work in New Guinea which showed percentages of periodic blood infestation of natives rising from 20 per cent to over 40 per cent in some areas. This high degree of infection was combined with nocturnal periodicity and a very low incidence of elephantoid lesions, whereas non-periodicity and elephantoid conditions were common throughout Polynesia. Mackerras in the discussion stated that he believed that two distinct though indistinguishable races of filaria existed there. The cause of both periodic and non-periodic infection appeared to be *Wucheria bancrofti.*

From the military standpoint it was important to recognise that day-biting vectors such as *Aedes scutellaris* abounded in Polynesia, but in Melanesia night-biting vectors were important, such as *Anopheles punctulatus.* It seemed fair to assume that, though the risks of infection were present, Australian troops were not likely to be heavily exposed. Further, if any infections occurred they would probably be mild, resulting from exposure over a limited period, that is about a year, and these should recover gradually but completely during the following few years. From the standpoint of the clinician chronic glandular and lymphatic enlargements might arouse suspicion; in particular enlargement of the epitrochlear glands was important. In these milder types of infection only biopsy could establish the diagnosis, as microfilariae were not then found in the blood. In this connection the findings in American troops are of interest. Thompson, Rifkin and Zarrow studied 200 young soldiers in two years. In the early stages they only found recurring attacks of lymphangitis and lymphadenitis. Later mild recurrent oedema occurred, and in the last stage of early infection signs of obliterative fibrosis of lymph channels appeared. In none of these stages were microfilariae found, and eosinophilia was not of decisive help. Search for microfilariae was simplified in Australia and New Guinea by the knowledge that the periodic type of filaria showed nocturnal rhythm; the embryos were most likely to be found in blood films during two hours before and after midnight.

The Australian experiences of filaria were small. Records at the end of the war show that in the case of 22 men the diagnosis was made in Australia and in that of 2 men in New Guinea. These figures do not give any indication of the place of infection. Some of the men were Queenslanders, and it is quite probable that they acquired filaria before they joined the army. On the other hand there may be others who were subjects of a mild invasion of the parasite in which no definite diagnosis could

be made, and which apparently gave rise to no further symptoms. Sometimes unexplained enlargements of lymph glands were seen in men exposed to risk of infection; they may have been filarial especially if recurrent or associated with febrile episodes. As Australian soldiers were not exposed in large numbers to intense degrees of infection of a prolonged period it is unlikely that filaria will be of importance in their after history.

REFERENCES

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