Tropical Eosinophilia

BY

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Ball (1950) discussed the distribution of "Tropical Pulmonary Eosinophilia" in Africa before the Royal Society of Tropical Medicine and referred to its alleged absence in Southern Africa, quoting Forman (1947), of Cape Town, Westwood and Levin (1950), of Johannesburg, and Gelfand (1950), of Southern Rhodesia, in support of his views. North of the Zambesi tropical eosinophilia is described from several quarters—from Egypt (Parsons-Smith, 1944; and Stephan, 1946), from Tanganyika (Ritchie, 1944; Wilson, 1947), and from Nigeria (Hunter, 1946; and McFadzean, 1955).

Since I expressed my views on the subject to Dr. Ball I have changed my opinion and I am satisfied that tropical eosinophilia is seen in Rhodesia, possibly more often than is believed (Gelfand, 1956). The great difficulty in Rhodesia is to adequately exclude in any person bilharzial infestation, which is endemic in every part of the territory. It is not easy to meet a person living in Rhodesia who can claim never to have touched or swum in natural waters. In this paper we are reporting one case in whom there was no history of exposure and in the other a doubtful occasion when the patient waded through a river while on a shooting trip in Northern Rhodesia. But this was several years before the onset of his illness, during which time he was well and the eosinophilia disappeared after the administration of arsenic.

Illustrative Cases

The patient referred by Dr. C. N. Young was a European female, aged five years, who lived in the Umvukwes district. She was in good health until the middle of October, 1954, when she developed a fever of 100° F. and vomited. Her doctor thought that she might be suffering from malaria, but as he failed to demonstrate malarial parasites in the blood films he did not prescribe any drug. The patient recovered after a few days, but not for long, as from then onwards, about once a month, Blanche developed similar attacks. Each one would last a few days, in which there was vomiting, cough and a high temperature. In December, when her temperature rose in a bout, a leucocyte count showed a marked leucocytosis of 41,000 cells per c.mm. and a high eosinophilia (60 per cent.). Dr. Young at once carried out a careful search for bilharzial ova in the urine and stool, but failed to find any. A very close interrogation was made for a possible exposure to infected waters, but the mother denied any possibility of this, as the child was brought up on a mine which was situated several miles away from a river and she had always taken care that her child should not be so exposed.

A few days later the child developed a fleeting rash on her neck and the mother noticed that she was also "croupy." She recovered from this attack and continued to run short relapses of fever, but despite her illness the patient did not lose weight, her appetite remained normal, and she carried on a happy existence.

A blood count carried out on 19th February, 1955, showed: Hb., 102 per cent., leucocyte count 7,000 c.mm., the differential count being neutrophiles 18 per cent., lymphocytes 18 per cent., eosinophiles 61 per cent., monocytes 3 per cent., the absolute numbers being 1,260, 1,260, 4,270 and 210 respectively.

The patient looked fairly well except that she was slightly pale. Physical examination revealed nothing of note beyond a slight enlargement of the spleen. Her lungs were normal on X-ray. No bilharzial ova were found microscopically in her stool and urine specimens. On sigmoidoscopy the rectal mucosa was healthy in appearance, and a snip of it showed no ova.

A diagnosis of tropical eosinophilia was made and the child was given an intramuscular course of six acetylarsan injections (1 c.c., 1½ c.c. and 4 x 2 c.c.). However, she continued to show a high eosinophilia, despite the fact that she enjoyed good health. A white cell count carried out on the 28th March, 1955—about three weeks after the acetylarsan course had been completed—showed a total count of 24,000, the differential being neutraphiles 11 per cent., lymphocytes 13 per cent. and eosinophiles 76 per cent. In April the differential count showed an eosinophilia of 27 per cent., and during May one of 40 per cent.

Blanche was seen at regular intervals since then, but despite the persistent high eosinophilia, she has continued to be in excellent health, has increased her weight and is full of energy. Her last blood count (13th August, 1955) showed a total leucocyte count of 42,000, the differential count being:—

	Per cent.	*Absolute Numbers*
Neutrophiles	19	7,999
Lymphocytes	14	5,894
Eosinophiles	66	27,786
Monocytes	1	421

Case II

An adult European male, aged 27 years, was a patient of Dr. D. H. Harrison, of Salisbury. He arrived in Southern Rhodesia from Australia in 1947, since when he could not remember exposure to any stream or river in Rhodesia. However, on close questioning he did recall that several years before the onset of the present illness he had visited Northern Rhodesia on a shooting trip and was obliged to wade through a river. He returned to Southern Rhodesia and he was in good health until Christmas, 1953, when he had a febrile illness lasting a week. He recovered fully from the complaint. In 1951 he worked on an asbestos mine for 12 months, but here he denied exposure to any of the rivers of that area.

Present Illness.—His present illness started two weeks prior to admission with aches and pains in his body. Five days later he began to show a moderate fever which continued until his admission to hospital, after which it continued for a few more days. He coughed each night for a week; the cough was dry and he complained of a frontal headache.

On Examination.—The patient was 27 years old and, although he looked somewhat thin, was fairly well built.

There was a slight fever (99.8° F.) on admission, which continued for only a few days, after which it subsided to normal.

The lungs were clear and the heart and blood pressure were normal. There were several enlarged lymph nodes in the right axilla and right groin. These were discrete and not tender, and one of them was removed from the axilla by Mr. Whaley for histological examination, but Dr. Blaine reported that the structure of the gland was normal, there being no eosinophilic infiltration. The spleen and liver were not enlarged. Further stool and urine specimens (in addition to those already tested by his doctor outside the hospital) were examined for bilharzial ova without success. A rectal snip was also taken, but no ova could be demonstrated in the mucosa. The red cell count on admission to hospital: haemoglobin 113 per cent. Red cells 5-6 million per c.mm., colour index 1.0. The following leucocyte counts were done:—

	3rd March	*7th March*	*11th March*	*16th March*	*21st March*	*6th April*
Leucocyte count	37,500	38,400	42,000	21,000	16,200	6,600
Differential leucocyte count:						
Neutrophiles	28	19	9	24	61	68
Eosinophiles	50	71	82	64	20	12
Lymphocytes	22	8	8	7	17	19
Monocytes	—	2	1	5	2	1

A diagnosis of tropical eosinophilia was made on the 7th March and 0.15 gram. N.A.B. was given and then 0.3 gram. twice weekly for six injections. He began to improve after the arsenic was begun, and on 21st March, when he was discharged from hospital, the eosinophil count had fallen to 20 per cent. and two weeks later to 12 per cent. In July, 1955, I was informed that he was in excellent health and that the eosinophil count had returned to normal. The response to treatment and the failure to demonstrate bilharzial ova would tend to rule out a bilharzial infestation as a cause of his complaint and the condition might reasonably be labelled as tropical eosinophilia.

Discussion

Briefly, tropical eosinophilia (although the word tropical is not essential, as it may occur outside the tropics) refers to that syndrome in which the four outstanding features are (Ball, 1950):—

(1) A history of persistent cough or asthma.

(2) An eosinophilia high enough to produce a leucocytosis.

(3) Miliary mottling on chest X-ray in about half the cases.

(4) A therapeutic response to arsenic.

The clinical picture of the disease as seen in Rhodesia is extremely variable and it would be difficult at this stage to describe the common form, since insufficient cases have been recorded. Its main feature appears to be a marked tiredness or debility which brings the patient to the doctor. It is a feature of many of our cases that the clinical feature of a relapse may be different to the previous one. Fever is usually present at some stage of the illness, but usually it is of brief duration and rarely lasts for long. Many subjects complain of a cough, although in the Rhodesian cases asthma or bronchitis is not always a striking feature of the complaint and may be entirely absent. Several of the cases I have seen complained of vague abdominal pain or discomfort or diarrhoea.

The duration of the illness also varies and it may continue for many months. Some cases respond to arsenic, whereas others are resistant to it and the illness runs a protracted course, often for months or even for a few years. The second case described in the paper responded well to a course of arsenic, but the first patient continued to show the high eosinophilia despite the treatment with this metal.

Cases with a high eosinophilia and in which bilharzia, ankylostomiasis or an allergic disorder can be reasonably excluded are not altogether uncommon in Rhodesia and will be found at all ages and in both sexes. But there is possibly a much greater group with only a slight or moderate eosinophilia which may be part of the tropical eosinophilia syndrome, but of a milder degree. There can be no doubt that one meets in general practice many cases showing only a mild blood eosinophilia for which no clear cause can be found.

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