TICK FEVER IN PALESTINE.

BY

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SPIROCHAETOSIS conveyed by ticks has been recognized in Africa since 1904 owing to the researches of Ross, Dutton, and others, who incriminated the tick *Ornithodoros moubata*; similarly, Miana fever in Persia was found by Balfour to be a form of relapsing fever transmitted by *Argas persicus*. I do not think that the relapsing fever which occurs in Palestine has previously been traced to infection by ticks, and the following notes may therefore have some interest.

The advanced troops on that front were infested with lice owing to the rapid advance after the fall of Gaza in November, 1917, and to the impossibility of getting transport for the numerous Thresh disinfectors which had been left behind. Relapsing fever was, in consequence, very rife, and, although rather outside the scope of this note, it may here be mentioned that its clinical characters did not by any means bear out the textbook description.

The parasite measured about 8μ in length, and had a great tendency to form loops, thus conforming to the *Spirillum recurrentis* rather than the longer *S. duttoni* of Africa. The initial fever lasted almost invariably seven days, but the subsequent paroxysms were very irregular in their duration and occurrence; frequently a second or third rise of temperature would only last one or two days, and there were instances of apyretic intervals lasting a month, while three or four relapses were fairly common. In its course the fever thus resembled a hybrid of the European and African varieties. Amongst the white troops the parasite was usually very difficult to find; many fields under the microscope had to be searched, and not infrequently recourse had to be made to the "thick drop" method; in the imported Egyptian Labour Corps, which suffered very badly, the parasite was usually demonstrable in large numbers. The severity of the symptoms did not seem to bear any relation to the number of spirochaetes in the blood. In the worst cases severe epistaxis was a troublesome and alarming complication, but amongst several hundred cases I only saw one death—namely, in a Maori who collapsed directly after his first crisis; although the paroxysm had been unusually mild.

On March 20th, 1918, eight men of the — Suffolks were admitted to hospital suffering from relapsing fever; as it was very unusual to get so many patients from one source at a time, inquiries were made, and it was found that they all belonged to one company of about 250 men, stationed for several days at Ras-el-Ain Castle (mentioned in Acts xxiii, 32, as Antipatris), which was then one of our advanced posts. They further gave the interesting information that they had been bitten by some animals "like sheep-ticks, oval in shape and having several legs, which crawled slowly and sucked blood, becoming red." One man had watched two or three feed on his arm, and had then squashed them. Another had shaken several from beneath his trousers in the morning; these were seen to crawl slowly away by several witnesses. They declared they were not lice, with which they were well acquainted, and, finally, they unhesitatingly identified *Argas persicus* from pictures of ticks. The diary of the movements of these men is instructive. They were bathed and their clothes fumigated at Mulebbis on March 10th, 1918. They went to Ras-el-Ain Castle on March 12th, where they remained four days and three nights. They returned to Mulebbis on March 15th, and were bathed and fumigated a second time on March 16th. The initial symptoms appeared on March 19th and 20th.

Four of the patients had shared the same bivouac, the pegs of which were fastened to the outer wall of the castle; a ditch or drain ran under the wall and traversed the floor of the tent. One man occupied the tent next door, and the remaining three slept in an outhouse within the castle walls. Spirochaetes indistinguishable from the parasite met hitherto were found in the blood of all the patients; the clinical symptoms were distinctly modified in comparison with the louse-infected cases, for the men were quite cheerful throughout the paroxysm, and looked at papers on each day of the illness—a very different picture from the ordinary individual, who lay like a log, with eyes suffused, intense headache and backache,

hacking cough due to congestion of the bases of the lungs, and complete anorexia. The temperature charts of these tick-infected men were very atypical: several showed a maximum of 102° to 103° , four had a crisis on the fourth day, three reached normal on the fifth day, and one came down by lysis.

The — Suffolks had been relieved by the — Norfolks on March 15th, and a watch was kept for cases of relapsing fever amongst the latter. Six appeared on March 23rd, giving the same history of having been bathed and fumigated before going to the castle, and of having been bitten whilst there by "tick-like insects." By that time a report had been sent to the A.D.M.S., who caused the bivouacs to be shifted thirty yards from the walls, and it is significant that, though troops continuously occupied this spot for the next five months, no further ticks were seen and no other cases of relapsing fever occurred. It will be noticed that the incubation period of the second series of cases was the same as that of the Suffolks—namely, seven or eight days.

Analysis of Patients Admitted to Hospital.

The following is a tabulation of the cases admitted from all companies of the Suffolk and Norfolk Regiments between February 20th and April 12th, 1918 (eight weeks):

	Suffolks.	Norfolks.
Surgical ...	10	0
Medical ...	17	18
Relapsing fever ...	8	6

(a) Relapsing fever was rigidly excluded from all the medical cases by repeated examination of their blood.

(b) No case of relapsing fever occurred in either regiment, except during the period covered by their stay at the castle.

(c) No case of relapsing fever occurred in those companies of the two regiments which did not visit the castle.

The Tick.

Unfortunately it was very difficult to get to the castle owing to its exposed position, but by the kindness of the A.D.M.S. I was enabled to make two or three visits for the purpose of obtaining specimens of the ticks. Scratching and scraping in the interstices of the ancient walls proved of no avail; a puppy was tied up to the walls for several nights but only secured a *Rhipicephalus*. Two fowls were next immured against the wall, and a specimen of *Argas* was obtained the next morning; by mischance the birds were left in the sun and died of heatstroke. They were replaced by another fowl, on whom next morning six hexapod larval forms of *Argas persicus* were found and identified by Dr. Woodcock of the 4th Military Laboratory, whose report on the first specimen is as follows:

One specimen only of the tick has been submitted for identification and examination. This was a young female ("nymph") belonging to the genus *Argas*, most probably *A. persicus*, but as the specimen was not adult the species could not be absolutely determined. The tick contained traces of digested blood, but no evidence of the presence of spirochaetes could be found.

A transfer to India put an end to my investigation. Another tick-infested spot was discovered later in three small caves a few miles from the castle. These caves became part of our front line after an engagement in May, and were used by stretcher-bearers of the — Field Ambulance as shelter during the subsequent shelling; a crop of cases of relapsing fever suddenly occurred about that period and were all traced to the caves, whose occupants had been bitten by ticks; no member of the field ambulance who had not been in the caves developed spirochaetosis.

ERYTHEMA NODOSUM AND TUBERCULOSIS.

BY

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APART from the mere coincidental occurrence of erythema nodosum and tuberculosis, the condition has been recorded following an injection of tuberculin, and under other circumstances in tuberculous patients. I have also noticed erythema nodosum in tuberculosis when for some reason a chronic condition becomes more acute, or at the time when symptoms of tuberculosis first become noticeable in a patient under observation as a contact.

CASE I.

Miss H., a girl clerk, aged 20, developed a cough about February, 1916, but continued at work, and during the summer her cough improved. Early in 1917 the cough returned, with

pyrexia, and after some days a typical eruption of erythema nodosum appeared on the legs. This disappeared in about three weeks, but pyrexia continued for some five weeks, and then gradually subsided. Tuberculosis was suspected, but the patient returned to work later in the year, still in indifferent health. In August, 1918, there was an attack of pleurisy, pyrexia recurred, and continued until her death from pulmonary tuberculosis in March, 1919. When seen, early in February this year, there were extensive physical signs of phthisis, with cavitation and fibrosis on both sides.

The eruption of erythema nodosum in this case coincided with the outbreak of a previously smouldering pulmonary tuberculosis, and could reasonably be attributed to that cause.

CASE II.

Mrs. H., 44, the mother of the girl whose history has just been narrated, had never been very strong, and months spent in nursing her daughter broke down her health. Early in April, 1919, an eruption of erythema nodosum appeared on the forearms and dorsum of the hands, on the legs and feet; at the same time a cough commenced, and pyrexia, reaching to 102° in the evenings. There were also night sweats and progressive emaciation. When seen early in May this year the marks of fading erythema nodosum were visible on the arms and legs. In the chest there were physical signs suggestive of somewhat extensive arrested tuberculosis on the right side, and some signs at the left apex also. The disease quieted down again in a few months.

Here the eruption coincided apparently with the recrudescence of an arrested lesion. It is interesting that a similar condition occurred in mother and daughter.

CASE III.

M. H., a married woman aged 27, was run down and anaemic early in 1913. In April there was an attack of pyrexia and pleurisy, accompanied by a typical eruption of erythema nodosum. Tuberculosis was diagnosed; bacilli were found in the sputum, and the patient was for some months an inmate of Winsley Sanatorium. After this she remained well until August, 1915, when pleurisy recurred, and an exacerbation of tuberculosis, but this time there was no erythema nodosum. In July, 1916, when last seen, the patient was well in health, but there were a few physical signs at both apices.

CASE IV.

In July, 1916, W., the two-year-old daughter of the above patient, had an attack of unexplained pyrexia, accompanied by erythema nodosum. In a month she was well again. No physical signs were detected in the chest, but the child was of a tuberculous type, and had a slight general enlargement of the cervical glands. The probabilities are, therefore, that this attack, which would have to be classified as that type of erythema nodosum which is accompanied by prolonged pyrexia, was due to tuberculosis.

Here also mother and daughter were both affected.

CASE V.

Miss G. is now 27 years old. Her father died of phthisis at 43, and one brother died at 16 of the same disease. At the age of 16 she first became ill with erythema nodosum and pyrexia, and from that time to the present she has been under treatment, intermittently, for pulmonary or glandular tuberculosis. This year she developed a typical erythema induratum on the legs, which is still under treatment.

In this case erythema nodosum and erythema induratum occurred in the same patient after an interval of ten years.

Discussion.

It is not for a moment suggested that tuberculosis is the only cause of erythema nodosum, but merely that a similar cutaneous manifestation may be due to many different poisons, one of which is that of tuberculosis. Moreover, the constitutional peculiarity which gives rise to this skin reaction seems to be inherited, as are other peculiarities—such, for instance, as the well known disposition to epidermolysis bullosa after slight injuries. We find instances of a similar reaction to different poisons in other structures besides the skin. In joints, for example, we may see an identical clinical picture due to different causes, and the same is true of the kidneys, the heart, and the lungs.

Out of 4,000 cases of tuberculosis and contacts under annual observation I have not yet noticed any other skin condition (apart from the well recognized tuberculides) which is definitely connected with tuberculosis. It has been stated that lupus erythematosus is attributable to tuberculosis, and I have seen a few cases of this disease, but not more than would be accounted for by coincidence; not more, for instance, than the cases of lichen ruber planus, which no one suggests is due to tuberculosis.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

X RAYS IN THE TREATMENT OF TUBERCULOUS ADENITIS.

I was interested to read in the *BRITISH MEDICAL JOURNAL* of November 29th an article by Mr. E. S. Molyneux on the use of radium in tuberculous glands of the neck.

The results of unaided surgery in such cases can hardly be considered good; recently I came across a case on which fourteen operations had been performed within six years, and a fifteenth was in contemplation. This may be an exception, but half a dozen operations are quite usual, and the cosmetic results leave much to be desired.

The effects of treatment by radium on early cases are no doubt excellent, but the point I wish to make here is that eminently satisfactory results may be attained by *x* rays, which are, as a rule, more readily available than radium. While *x*-ray treatment alone will cure the very early case, it is, in my experience, usually desirable to call in a surgeon when all the periglandular inflammation has subsided, and the glands can only be detected on careful palpation. An operation at this stage—which is usually reached after about six to eight weeks of *x*-ray therapy—is a very simple matter, and the scar should be practically invisible. If the operation be not done, a considerable number of apparent cures will relapse, and do not a second time yield so easily to treatment. Pre-operative treatment, if given with proper dosage and filtration, does not in any way unfit the skin to withstand surgical trauma.

A case in which softening is already present should be dealt with at once surgically, but should be treated by *x* rays very soon after the operation. If this is done, discharging sinuses will heal in a few weeks, instead of taking months, as is sometimes the case if they are left to themselves.

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A RARE CASE OF LEFT INGUINAL HERNIA.

The following case is of sufficient rarity and interest to warrant a brief report. Within a left inguinal hernial sac were contained (1) the pyloric end of the stomach; (2) several feet of small intestine; (3) the caecum and appendix.

The patient, a man aged 54, was admitted to the General Hospital, Wolverhampton, on November 12th, 1919, as a case of strangulated inguinal hernia. He had suffered with this hernia for eighteen years, during which time he had had occasional vomiting. This had been almost constant for the week preceding admission, and was accompanied by scrotal pain. On admission he was very ill, indeed almost moribund, and stated that he had been losing weight for two years. He was incessantly vomiting typical dilated-stomach contents. He had a left inguinal hernia the size of an adult head, and this was easily reducible in part. The abdomen was greatly distended and universally hyper-resonant. A distended stomach, probably due to a pyloric cancer, was diagnosed. Under a general anaesthetic the abdomen was opened above the umbilicus. An enormously distended stomach was discovered which occupied almost the entire abdominal cavity. It was incised, and three pints of liquid contents escaped together with a great quantity of gas; even then the pyloric end of the stomach could not be drawn into the wound, but on introducing the left arm into the abdominal cavity the stomach was easily traced into the inguinal hernia, from which it was withdrawn in company with the caecum and appendix, and a great length of small intestine and mesentery. The laparotomy wound was rapidly sewn up, and a radical cure of the 4-in. hernial opening completed. The distal end of the stomach showed a marked constriction corresponding to the level at which the neck of the hernial sac had gripped it.

The patient died within twenty hours. *Post mortem* the stomach was found to be two feet in length, and easily to contain thirteen pints of water. The ascending colon was constricted just distally to the imprisoned caecum. A few proximal feet of the small intestine were distended, the rest collapsed. The mesenteries were very greatly elongated, and the entire colon was pelvic in position. There was no visceroptosis present apart from that of the alimentary canal.

Thanks are due to Mr. Deanesly, under whom the patient was admitted, for permission to publish these notes.

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