

REPORT OF AFFILIATED SOCIETY.

FORFARSHIRE MEDICAL ASSOCIATION.

Tubercle Bacilluria and its Significance.

The Spring Meeting of the Forfarshire Medical Association was held on Wednesday 26th May, 1937, at Glenlomond Sanatorium, Kinross, with the President, Dr. George F. Whyte, in the Chair. The Meeting was devoted to a discussion of "Tubercle Bacilluria and its Significance" by David Band, F.R.C.S., consulting surgeon, Glenlomond Sanatorium and W. T. Munro, F.R.C.P., Medical Superintendent.

The subject matter for discussion was outlined by Dr. Munro. After expressing his appreciation of the visit to Glenlomond of the Forfarshire Medical Association, he introduced Mr. Band who reviewed the work which had been carried out partly at Glenlomond Sanatorium and partly at the Surgical Research Department, University of Edinburgh.

Mr. Band began with a brief consideration of the pathological state of the kidney removed by the surgeon on account of tuberculous disease. He described this as major tuberculous disease and asked if it were not possible to recognize tuberculous invasion of the kidney at an earlier stage. It was felt that such an investigation could be made only in a Sanatorium, and this was what had been done at Glenlomond.

Scope of the Investigation: The urine of every patient found to have a tuberculous lesion other than in the genito-urinary system was collected for 24 hours and allowed to stand for 6 hours in a conical glass vessel. The deposit was collected by pipette, centrifuged and examined for pus cells, red cells and acid-fast bacilli. If pus cells were present, an effort was always made to obtain a growth of tubercle bacilli by direct culture; and in every case a guinea-pig was inoculated with the whole deposit if it were not too bulky. In a few cases in which fair numbers of acid-fast bacilli were seen it was found that they were not tubercle bacilli.

Tubercle bacilli were only rarely demonstrated, but no case proved positive, either by inoculation of a guinea-pig or by culture, without the presence of pus cells; in fact, a few pus cells persistently present in the urine is the first evidence of renal involvement. In a certain number of cases where tubercle bacilli were found to be excreted in the urine, retrograde pyelograms were obtained in order to ascertain the earliest evidence of renal damage. An endeavour was made to obtain serial sections of the kidneys of any of these patients who died, and to isolate the tubercle bacillus from the cortex of these kidneys. By these methods it was hoped to obtain information on the following questions.

1. Does the excretion of tubercle bacilli mean that there is a tuberculous lesion in the kidney? Tubercle bacilluria has been termed "excretory" or has been considered the result of contamination from an unsuspected genital source. The aim was to determine by serial sections whether early tuberculous lesions were present, or whether there was an excretory bacilluria without focal tubercle in the kidney.

2. If there were early focal lesions in the kidney would there be evidence of healing? Evidence of fibrous tissue change in giant cell systems, without breaking down, was carefully sought for.

3. By retrograde pyelograms it was hoped to determine whether any diagnostic evidence of a renal lesion could be observed in cases of tubercle bacilluria.

4. It was desired to ascertain the incidence of tubercle bacilluria in patients suffering from extra-genito-urinary tuberculosis, and to classify the positive cases in clinical groups.

5. What is the future history of positive cases? Sufficient time has not elapsed to allow of a full answer, but as these cases have been observed from one to seven years they can be placed in certain well-defined groups. Do tubercle bacilli cease to be passed? Some cases eventually give definite symptoms of renal disease; in others it would seem as if tubercle bacilluria was part of a terminal general spread.

6. The type of bacillus was investigated.

7. The renal function was also studied by a urea range test.

Out of 300 cases, 64 have been found to have a definite tubercle bacilluria; with three exceptions all had sputum positive for tubercle bacilli. 158 were males and gave 20 positives, while 142 were females with 44 positives. The state of the pulmonary lesion in most cases was advanced; no less than 13 of the 20 males, and 24 of the 44 females have died; two of the males and 10 of the females are very ill. Thus only five of the males and ten of the females could be classed as possible recoveries.

Follow-up Table.
64 CASES. 1 TO 7 YEARS.

Males 20.

Patients well—bacilluria absent	...	...	...	3
„ improving „ „	...	...	...	2
„ losing, no renal symptom	...	...	...	2
„ Dead, renal symptoms developed	...	...	...	1
„ Dead, no renal symptoms	...	...	...	12

Females 44.

Patients well—bacilluria absent	...	...	...	6
„ improving „ „	...	...	...	4
„ losing, no renal symptom	...	...	...	9
„ losing, renal symptom present	...	...	...	1
„ dead, renal symptoms developed	...	...	...	1
„ dead, no renal symptoms	...	...	...	23

Examination of Serial Sections.

Twenty-seven pairs of kidneys have been examined by serial section in the Research Laboratory of the Department of Surgery of the University of Edinburgh. In every kidney focal tubercles have been shown as giant cell systems in relation to glomeruli. They are cortical and always bilateral. Some have been recent deposits, some show marked round cell infiltration, while in others there is definite evidence of healing as shown by fibrotic changes round glomeruli. Kidneys have also been examined where there has been failure to isolate the tubercle bacillus from the urine. In one of these there was definite evidence of healed lesions, while in two no evidence of any focal deposit of tubercle could be observed. No case of tubercle bacilluria failed to show bilateral cortical tubercle systems.

What is the Significance of this Tubercle Bacilluria?

A study of these 64 cases leads to certain conclusions. The incidence of positive cases seemed a high one—64 cases out of 300 examined, or 21.3 per cent. This figure is in line with that of Harris of Toronto who found 22.7 per cent. positive in a series of 110 patients suffering from tuberculosis of bone and joint. But the most vital question is that relative to the possibility of focal tubercle in the kidney. Does tubercle bacilluria always mean a renal lesion? And does the fact that some patients cease to pass tubercle bacilli mean that those lesions may heal? There may be cited the case of a patient with healed pulmonary lesions who showed renal symptoms ten years after tubercle bacilli ceased to be coughed up. Does not this suggest that an earlier implantation in the kidney may break down some years later? If so, then a question arises as to the future history of those who cease to pass tubercle bacilli in the urine. The time interval between a symptomless tubercle bacilluria and the appearance of symptoms suggestive of a renal lesion may be short as in some cases in the present series. The follow-up Table shows that the 64 cases fall roughly into three groups.

1. A group of 15 in whom tubercle bacilli and pus cells cease to be passed.
2. A small group, three in number, who go on to definite symptoms and give suspicious pyelograms at a later date.
3. A large group wherein renal foci would seem to be part of a general terminal spread.

If group 1 (15 cases) is reviewed, it is found that the pulmonary lesion in each has healed. They have ceased to cough up tubercle bacilli, the urines have failed to show pus cells, and there has been failure to infect a guinea-pig. One can hardly doubt but that in their kidneys there were cortical lesions which have become walled off by fibrous tissue. Further evidence of healing is that pus cells have ceased to be passed. While the evidence is that these lesions may heal, it must be remembered that such early implantations may be lit up by some exciting circumstance and the first symptoms of renal tuberculosis appear in later years. Thus involvement of the second kidney is not to be regarded as a spread from the bladder but as a reactivation of the original implantation. The recognition of this condition is important. It appears to be in no way a filter passage but a part of a general infection, and may occur at a very early stage in the tuberculization of the patient. The youngest subject to give a positive finding was a child of 2½ years; after two years treatment he appears to be well.

The lesson from these cases is that healing of the kidney can occur, and the sooner the infected subject is put under the best physiological conditions the better his chance. There is, too, the fact that after removal of a kidney with gross disease, the magic word "cured" must not be written at once. It must be remembered that the other kidney has been infected, and one year in a good sanatorium is not a day too long. The patient must be given the full chance not only to get over his bladder symptoms, but to establish security as to his remaining kidney.

The presence then of tubercle bacilli in the urine is not an indication for immediate operation. If the pyelogram does not show evidence of cavitation then the lesion should be given the chance to heal by Sanatorium regime.

(A demonstration of pyelograms and sections of kidneys showing early implantations with giant cell formations, and sections of kidneys with gross disease was on view.)