THE TUBERCULIN SKIN REACTION (VON PIRQUET'S).

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I AM indebted to the kindness of Dr. Hutton and Dr. Heywood for permission to publish an account of our experience in their wards in the Manchester Children's Hospital, Pendlebury, with the von Pirquet skin reaction during the months October, 1909, to March, 1910.

The test was applied in 92 cases, which I have tabulated below. The procedure we adopted was to make three small scarifications on the forearm, aseptically prepared, two above, parallel, and one below. The upper two were inoculated with 25 per cent. tuberculin solution obtained from Messrs. Martindale. The lower was used as a control. The appearance of a ring of hyperaemia or red papules in twenty-four hours was regarded as positive. In the table below the cases styled "non-tuberculous" were chiefly chorea or enuresis, in which no signs of tuberculosis were discoverable clinically. The table contains the clinical diagnoses of the diseases in which the test was applied.

Von Pirquet's Reaction.	Positive.	Negative.	Total.	Positive. Percent.
1. Undoubted pulmonary tuberculosis	18	4	22	81.8
2. Doubtful pulmonary tuberculosis	10	1	11	90.9
3. Bronchitis	4	3	7	57.1
4. Pneumonia	2	2	4	50.0
5. Bronchopneumonia	1	5	6	16.6
6. Pleurisy	4	3	7	57.0
7. Empyema	—	6	6	—
8. Abdominal tuberculosis	3	2	5	60.0
9. Doubtful enteric fever	2	—	2	100.0
10. Renal tuberculosis	1	1	2	50.0
11. Tuberculous meningitis	2	4	6	33.0
12. Cerebral tumour	1	—	1	100.0
13. Non-tuberculous cases	—	13	13	—
Total... ..	48	44	92	52.1

1. In the Twenty-two Cases of Undoubted Pulmonary Tuberculosis—(a) In the 18 positive cases all presented definite signs of phthisis; 11 gave definite family history of tuberculosis; in only 4 was there pyrexia, the rest were quiescent. (b) In the 4 negative cases, all presented definite signs of phthisis. In one there had been an attack of pneumonia seven weeks previously (? unresolved pneumonia); another, with definite family history and definite signs of pulmonary tuberculosis, had traces of a recent attack of chicken-pox upon him; the other 2 gave a marked family history of tuberculosis, no history of pneumonia, and both had marked physical signs.

2. In the Eleven Cases of Doubtful Pulmonary Tuberculosis—(a) In the 10 positive cases, 6 gave definite family history of tuberculosis, 5 of previous bronchitis or pneumonia, and 6 a history of measles. There was no pyrexia, the signs were very vague, and the history of loss of flesh and night sweats was variable. The majority of these improved under treatment. In 2 cases it was thought that the disease might have been freshly lighted up by the application of the tuberculin; but on the whole the test was an aid to diagnosis, and led to earlier and more definite lines of treatment than might otherwise have been adopted. (b) In the 1 negative case there were definite signs and symptoms of phthisis; no pyrexia was present. The patient was discharged "cured."

3. In the Seven Cases of Bronchitis—(a) In the 4 positive cases, the clinical diagnosis in 3 was bronchitis (? pulmonary tuberculosis); there was a definite history of measles in 3; no family history of phthisis. All presented signs so vague that a definite diagnosis could not be made except from the history of chronic cough, expectoration, and loss of flesh. In the fourth there was a long history of cough, loss of flesh, and expectoration, and there was a very vivid reaction, and it seemed as if the tuberculin might have lighted up the disease here, as definite signs shortly developed at both apices, and did not clear up on discharge. (b) In the 3 negative cases, in 2 there was a definite history of phthisis, in all of measles, and there were only signs of chronic bronchitis, and cough; they were treated for this and discharged cured.

4. In the Four Cases of Croupous Pneumonia—(a) In the 2 positive cases, in 1 the clinical diagnosis was unresolved

pneumonia; there was a definite history of phthisis. In the other chronic bronchitis had existed for a year; no family history of tuberculosis. The case improved but still displayed signs on discharge. (b) In the 2 negative cases, both were definite cases of pneumonia, and they both cleared up absolutely and were discharged cured.

5. In the Six Cases of Bronchopneumonia—(a) In the 1 positive case there was a definite history of phthisis and history of measles and chronic bronchitis. The temperature fell shortly after admission, and the diagnosis of phthisis seemed established. (b) In the 5 negative cases there was no family history of phthisis; there was history of measles in 2 cases. All seemed definite cases of bronchopneumonia. The signs cleared up, and the cases were discharged cured.

It is not necessary to summarize the other cases. In pleurisy we found the test of help in diagnosing the cause of the effusion, which we were able to verify in some cases by microscopical examination of the fluid, and by culture methods. The same help was obtained in the cases of empyema. In the diagnosis of suspicious cases of enteric fever we got great help from the test. In the cases of meningitis it is difficult to understand why the test was negative in 4 of the 6, as all had equally pyrexia and the fluid in each case was clear. In both the positive and in one of the negative cases pure cultures of pneumococci were grown from the spinal fluid. All were found definitely to be tuberculous meningitis *post mortem*. The case of cerebral tumour which gave a positive reaction had no pyrexia, and solitary tubercles were found *post mortem*.

We have come to the conclusion that the test is of great help:

1. In the early diagnosis of pulmonary tuberculosis and its distinction from unresolved pneumonia and chronic bronchitis.
2. In the differential diagnosis between enteric fever and abdominal tuberculosis and the early diagnosis of abdominal tuberculosis.
3. In the diagnosis of the cause of pleuritic effusions.

We do not appear to get much help from the test:

1. In cases of tuberculous meningitis.
2. In cases of tuberculosis where some acute infectious disease accompanies it; and
3. Cases of tuberculosis associated with much pyrexia.

We have not yet facilities for applying the test to every case entering the hospital which would give much more satisfactory statistics. From our experience it is not established that the test is quite without risk to the patient, as mentioned above. Up to the present, however, it has been most helpful in diagnosis, and appears to us as not entailing any serious risk to the patient.

SOME POINTS RELATING TO THERAPEUTIC IMMUNIZATION.*

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THERAPEUTIC immunization is a method of treatment in cases of bacterial invasion whereby the aid of proved scientific phenomena is brought to Nature in establishing a rising tide of immunity, and thus enabling the human organism to react successfully to the infection, in precisely the same manner as is accomplished by Nature in those cases where spontaneous cure results. I would here remind you that opsonin renders the bacteria vulnerable to the phagocytes, that without its presence in a germ laden tissue phagocytosis cannot take place, and that from the early experiments of Wright and Douglas it is evident that opsonin acts on the bacteria and not on the phagocytes.

In vaccine therapy we are dealing with a method that is capable of giving the most gratifying results—at times beyond the dreams of the most sanguine—yet unless judiciously applied it may lead to dire disappointment, and receive much undeserved condemnation. Where this has occurred I have almost invariably found that the fault lay with the would-be immunizator rather than with the method. It is useless to inject vaccines into a patient,

* Read before the Bath and Bristol Branch of the British Medical Association.