A CLINICAL INVESTIGATION

OF SOME ASPECTS OF

THE DIAGNOSIS OF POLIOMYELITIS

A thesis presented for the
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By

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INTRODUCTION.

AIMS OF THESIS.

During the period May, 1949 to October, 1950, over 1,500 patients, suspected of having poliomyelitis were admitted to the Northfield Infectious Diseases Wards of the Royal Adelaide Hospital. Many of these patients were diagnosed as having poliomyelitis with some unusual manifestations. These cases have been studied by another worker. I undertook an investigation of the clinical findings in 450 patients with typical poliomyelitis who were examined by me, personally. These patients were classified as having mild, moderate, or severe attacks and their symptoms and signs in each group compared. It was desired to discover if the signs and symptoms in these groups differed in any way according to the severity of the attack. In addition, the presence of Xanthosis Cutis was noticed in both typical and atypical cases of poliomyelitis. An original clinical description of this phenomenon will be presented together with an investigation of its cause. Arising out of this investigation a bedside test was developed which has proved of value as an aid to diagnosis. A further investigation of 23 patients with poliomyelitis was undertaken in an attempt to confirm and correlate the investigations already done and to see if any more light could be shed on the erythrocyte sedimentation rate in poliomyelitis.

Aims of Thesis. Continued.

Part A of this thesis presents the findings from a study of the symptoms, signs and laboratory tests in mild, moderate and severe attacks of poliomyelitis.

Part B of this thesis offers an original clinical description of one sign, namely, Xanthosis Cutis, and the results of an investigation into the cause of this condition.

Part C of this thesis is a clinical presentation of 23 patients with poliomyelitis and an assessment and correlation of a battery of tests performed on each of them, with a view to confirming the findings in Part B and further studying the factors influencing the erythrocyte sedimentation rate.

ORIGINAL NATURE OF THE INVESTIGATIONS.

PART A: As far as I can ascertain nobody has heretofore published a comparison of the clinical findings in mild, moderate, and severe attacks of poliomyelitis. Accordingly, the whole of the investigations in Part A of this thesis are claimed as original. In addition, no reference has been found to any study of the first symptom complained of by patients with poliomyelitis. A number of articles exist which discuss the early symptoms in this disease but no one, to my knowledge, has investigated the first symptom only. Many original findings are presented in this statistically controlled investigation, but the most important in the diagnosis of poliomyelitis are those

Original Nature of the Investigations. Continued.

arising from a study of the first symptoms. These are:-

1. Attention to first symptoms was found to be of considerable importance in making an early accurate diagnosis of poliomyelitis.
2. The first symptom of a patient suffering from poliomyelitis was discovered to be of great value in assessing the prognosis of that individual. For example:-
   (1) Headache, as a first symptom, was found to decrease in frequency to a significant degree with increase in the severity of the disease. Nevertheless, headache was a prominent first symptom in attacks of mild, moderate, or severe degree.
   (2) Backache, as a first symptom, increased in frequency with the severity of the attack to a highly significant degree.
   (3) Sore Neck showed no significant difference in incidence in any group.
   (4) Vomiting, as a first symptom, has a definite tendency to be more common in mild poliomyelitis and less common in moderate and severe cases.

Other clinical manifestations of poliomyelitis have been confirmed statistically.

Original Nature of the Investigations. Continued.

PART B: An original clinical description of Xanthosis Cutis in poliomyelitis is presented. An attempt was made to discover the cause of this yellow pigmentation of the skin. The various original investigations which were carried out are described. Although no absolutely conclusive proof was found, the result of this research strongly suggested that the substance responsible for the Xanthosis Cutis was carotin. The findings on which this belief is based are presented.

As a direct result of this enquiry a bedside test has been evolved which has proved of considerable value in the diagnosis of acute poliomyelitis.

PART C: The original findings in Part B are confirmed. In addition, serum potassium levels have been shown to be normal in poliomyelitis patients. Factors influencing the erythrocyte sedimentation rate in poliomyelitis have been investigated and it has been shown that the tendency to high normal and high serum albumin levels, low normal and low serum globulin levels and low serum cholesterol levels all help to keep the erythrocyte sedimentation rate within normal limits in uncomplicated poliomyelitis. It was also shown that a fever of more than 102°F., the presence of a leukocyte count of more than 10,000 per c.m.m. and/or an erythrocyte sedimentation rate of more than 10 m.m. in 1 hour (Wintrobe) method,

Original Nature of the Investigations. Continued,

usually indicated a wrong diagnosis or the presence of a complication.

ADVANCEMENT OF MEDICAL KNOWLEDGE AND PRACTICE.

All the original points presented in Part A, Part B and Part C are claimed to constitute a definite advancement of medical knowledge. Advancement in medical practice is claimed as a result of the investigation and comparison of clinical findings in mild, moderate, and severe attacks of poliomyelitis. Of particular value is the knowledge gained from the study of the first symptom. The original clinical description of Xanthosis Cutis in poliomyelitis, its investigations, and the bedside test which has resulted from this are believed to be of considerable practical value.

Of value also is the knowledge that serum potassium levels are normal in poliomyelitis. The investigation of the causes of the normal erythrocyte sedimentation rate in uncomplicated poliomyelitis is also an advancement of medical knowledge.

It is respectfully submitted that this thesis constitutes an original and substantial contribution to medical knowledge and to medical practice.