MATERIAL AND METHODS
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Two hundred and ninety patients who suffered disability due to permanent paralysis as a result of poliomyelitis, were received at orthopaedics out patient department, M.M.B. Medical College hospital, Jhansi and at District Hospital, Jhansi between July 87 and June, 88.

All the cases of poliomyelitis having residual paralysis for one year or more were the subject of present study. Average age group of patients included in this study was 13.2 years. The patients were of either sex, irrespective of their profession and socio-economic status.

In the present study a concerted effort has been made to demonstrate the pattern of muscle distribution in post polio residual paralysis patients, if any.

CRITERIA FOR SELECTION OF CASES

Patients having poliomyelitis of less than one year duration were not included in this study. Only those having residual paralysis for one year or more were the eligible candidates.

DIAGNOSIS

A short history about the onset of paralysis, age of involvement and extent of paralysis with symptoms at the time of acute attack of poliomyelitis was taken. Whether the child was walking before the onset of paralysis or not was also enquired.
(i) **Preparalytic stage of poliomyelitis**

The illness is usually of vague and variable duration. It may last from a few hours to few days, and one to three days is the usual duration. Acute attack of poliomyelitis may be quite severe or so mild as to pass unnoticed. It is usually but not always followed by an asymptomatic stage before the onset of paralysis. Many patients never progress beyond this stage and are only diagnosed by the laboratory findings of the polio-virus in the throat or stools.

The importance of this stage is that exercise, injection or operation may precipitate severe paralysis in the limbs exercised or traumatized.

(ii) **Signs and symptoms**

The history given by patients is variable and vague and mimic other viral infections such as influenza. The more common signs and symptoms are:

(a) Headache and malaise.
(b) Sore throat and upper respiratory tract infections.
(c) Slight cough.
(d) Diarrhoea or constipation.
(e) Backache and joint pains.
(f) Pyrexia of variable duration and severity.
(g) Mild neck stiffness.

Many other symptoms may occur, and the only safe way to deal with the problem is to regard all children
with above symptoms as suspects during an epidemic.

**TESTING OF MUSCLE POWER AND MUSCLE CHARTING**

Each patient was examined at the out patient department. A complete muscle test was performed on each occasion. So far as possible testing was made in a warm room (i.e., with adequate temperature), after rest.

Standard methods of muscle testing were used (Kendall and Kendall, 1971, Daniels Williams and Worthinghom, 1947). Each muscle was allowed to contract three times, through the greatest range of movement of the joint concerned. The grade recorded depended upon the power of muscle in the third of three contractions.

The scale of muscle power ranging from 0 - 5 recommended by the Medical Research Council was used during making of the observations. All the tests of muscle power were made by the same person (myself).

Grade 0 = Complete paralysis.

1 = A flicker of contraction only.

2 = Power detectable only when gravity is excluded by appropriate postural adjustment.

3 = The limb can be held against the force of gravity, but not against examiner's resistance.

4 = There is some degree of weakness, usually described as poor, fair or moderate strength.

5 = Normal power is present.
The detailed examination of patient regarding the muscle power was made. Findings observed during examination were recorded in the proforma as in annexure-I.

THE ACCURACY OF MANUAL MUSCLE TESTING

The estimation of muscle power by manual methods has been the subject of some criticism by those who advocate a return to mechanical methods of measurement of muscle power (Russell, 1952) - notably that, in the assessment of the power of a muscle, it is not certain that two observers will assign the same grade to it.

In most muscles and muscle groups the Medical Research Council Scale can be used to give an unequivocal result. An incorrect assessment is almost always either due to ignorance of the method, in attention to detail, lack of appreciation of the action of the muscle under test or the deception by the trick action of another muscle. A high degree of objectivity is necessary in manual muscle testing.

Ideally, muscle tests should be made by a single person. The assessment of the power of certain muscles, such as the muscles that act upon the digits, is difficult to make in the exact terms of the Medical Research Council Scale and is partly dependent on the pure judgement of the particular observer; even so, the assessment of the observer should be consistent.
EVALUATION OF RESULTS

Simple mathematical calculations were done. Statistics was used to work out associated paralysis. Each muscle or muscle group was paired with every other muscle. $\chi^2$-test was applied repeatedly. Differences between the expected and the observed findings were worked out and submitted to statistical analysis.