INTRODUCTION
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Death before maturity is the usual fate of the untreated crawling crippled child in developing countries. Most children with poliomyelitis, however, when upright, and walking with supports or following operations are accepted by the community, educated by parents and relatives and employable when they reach maturity.

Poliomyelitis is a generalized infection which may involve the whole body, including the muscles directly and liver, spleen and gut in acute stage. The central nervous system manifestations, however, with the involvement of brainstem and anterior horn cells of the spinal cord are the only permanent manifestations of the systemic disease. The residual effects of poliomyelitis are due to destruction of the anterior horn cells of the spinal cord and the brain stem. This causes a lower motor neurone type of asymmetrical flaccid paralysis with normal sensations. The muscles affected depend upon level of the spinal cord involved, but the paralysis tends to affect certain muscle groups more often than others and the lower limbs are more often involved than the upper ones.

At the end of an year of treatment, the permanent paralysis and disability is known. Except in a very few severely affected patients no further benefit is likely to arise from continuation of physiotherapy, muscle power remaining unchanged.
Once permanent paralysis is established, no further improvement can be expected by natural means. Treatment is directed towards prevention and if necessary, correction of deformity and use of reconstructive surgical procedures that may enhance residual function.

The severity of paralysis following an attack of acute anterior poliomyelitis shows extreme variation. At one end of the scale, the patients may show paralysis of only one or two muscles which may recover completely, at the other end there may be paralysis of almost all four limbs and trunk. The distribution of paralysis shows at first sight no logical distribution. It is not related to nerve root or peripheral nerve distribution and the loss of power in any muscle may be of any degree from slight paresis to complete paralysis.

It is the object of this study to review this distribution of paresis and paralysis in the muscles of lower limb, trunk and upper limb, to account for its disposition in terms of the destruction of motor nerve cells in the spinal cord, and to indicate the practical application of the findings in the management of poliomyelitis.

The distribution of muscle weakness is a matter of considerable importance from the point of view of joint mechanics. When there is a marked imbalance of muscle power in one of a pair of muscles having antagonistic
action, the weak one may show, instead of improvement, a progressive loss of power over a period of years. For example, without special treatment a weak muscle such as the tibialis anterior may gradually deteriorate, become unduly lengthened, and allow the opposing gastrocnemius to become shortened.

In these instances, we have a situation, which may lead to progressive deformity unless, appropriate therapeutic measures are taken. There may also be progressive loss of muscle function by prolonged immobilization and through overstretching. In the late stages of the disease, even as long as 20 years after the onset, it is possible to increase muscle strength by progressive resistance exercises. Although the percentage increase of muscle strength may not be great by these methods, the improvement in function is often gratifying, enabling the patients to do away with braces or other supports, and to carry on various activities with much less fatigue.

Another phenomenon which has been included in present study is of associated paralyses. Some muscles or muscle groups have a tendency to be affected or spared together. These observations have been applied to the prognosis in individual patients and have been found to be valuable in making decisions about the management of paralysis. A patient with paralysis of the quadriceps,
hip adductors and hip flexors may be prescribed a caliper at an early date during the convalescent stage. These muscles have tendency to be involved together. Usually when both associated muscles are paralysed the prognosis for quadriceps recovery is very bad. Therefore one can safely predict that the quadriceps is not going to recover and thereby render the expensive caliper useless. On the other hand when both associated muscles are paretic or normal, there is an excellent prognosis for all muscles including quadriceps.

The irregular or patchy involvement of muscles with intact sensations is the characteristic of poliomyelitis which distinguishes it from other neurological disorders. This pattern offers great advantage to the treating surgeon for he may select an appropriate muscle for the redistribution of muscle power in the otherwise normal limb. The knowledge of the frequency of involvement of various muscles may be of great help in these redistribution of muscle power procedures. Keeping this in mind a study has been proposed to find out the involvement of various muscles and to identify any pattern if possible.

AIMS OF STUDY

1. To review the distribution of paresis and paralysis in the muscles of the body.
2. To indicate the practical application of the findings in the management of poliomyelitis.

3. In clinical practice a study of the distribution of muscle paresis and paralysis may be of help in the diagnosis particularly of poliomyelitis without any history of fever and in the prognosis and management of these cases.