

STRENGTH TRAINING FOR POLYMYOSITIS PATIENT

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INTRODUCTION

Polymyositis is a diffuse inflammatory disease involving muscular tissue leading to a loss of power. The group of disorders is heterogeneous and rare; its incidence is probably about 3 per million population per year in the United Kingdom. The etiologic factors are poorly understood and have been claimed to be viral etiology. There are substantial evidence for the involvement of cell-mediated autoimmune damage to muscle cells.(1)

Clinical features of polymyositis presents as symmetrical weakness of limb girdle muscle, commencing from the lower girdle. Patient usually experience difficulty in rising from a sitting position, going upstairs, getting in and out of a bath and eventually getting out of bed. Wasting of muscle groups may be prominent. In some patients respiratory muscle involvement may lead to respiratory failure.

This is a disease of muscle where some or all of the muscle fibres of a motor unit do not function properly and additional motor units are recruited to provide a specific strength of contraction. In the inflammatory myopathies of polymyositis, there is segmental necrosis of a muscle cell. As a result of this process, a single muscle fibre can be divided into many individual segment of which only one segment is innervated.(2)

Strengthening exercise in the face of active myositis should be undertaken with caution because the effects of resistive exercises on the existing muscle inflammatory disease have not been adequately assessed.(3) Polymyositis is a classic example of motor unit disease that may progress, become arrested or improve. Physical treatment is based on 3 principles; 1) maintain flexibility 2) minimize pain through heat application and 3) maximal use of muscles will be the best therapy.

SUBJECT AND METHODS

Because of the rarity of the disease, only ONE female subject of 57 years of age as diagnosed by her physician to be suffering from polymyositis. Subject was under prescription of 2 prednisone (steroids) tablet per day. She was unable to sit up or perform any personal mobilization on her own without any assistance. Mobilizing any of the joints will ensue severe pain on the following day as seen in people suffering from delay onset of muscle soreness.

Approaching this experiment, it requires some extend of education to the subject. Subject was explained on the chemical and electrical phenomena of muscular contraction. She must know that for her rehabilitation, every contraction must only occur at her will. In the "Imagined Contraction" as mentioned by Enoka, R.M.,(4), this is a form of strength training without any mobilization, this is entirely different from Isometric Contraction.

In the case of polymyositis, patient must maintain flexibility. As such, we advise subject to be conscious of every movement of the joints by the contraction of the prime movers. There must be a mind and muscle connection. From the rationale of "Imagined Contraction", the adaptation in the nervous system increases spinal connection and nerve conduction at which to an extend improve the present situation due to her old age. With the improved of the spinal connection and nerve conduction, muscular tonous increases because of its specificity, each strength training exercise is an isolation movement. This type of contraction will make it more easier for the subject to perform, even the degrees of the joint displacement is small.

Transmission of impulse is targeted well based on the mind and muscle connection. As compared to normal contractions, majority of the contractures were assisted mainly by the synergistic muscle.

RESULT

No. of subject	1st. month training	2nd. month training	3rd. month training	Does of medication
1	Targeted Joints	Joint Strength Mobility	Personal	Before Training - 2 Prednisone
	Shoulder	△	Able to dress up	After Training - 1 Prednisone
	Elbow	△	Able to wash face	
	Knee	△	Able to comb hair	
	Ankle	△	Reduce Assisted Walking	

DISCUSSION & CONCLUSION

The difficulties in this experiment is the ability of the subject to concentrate on each contraction of the muscle group because every contraction and relaxation of a muscle are action series done quite subconsciously. The expression of voluntary strength and power may be linked to a skilled art of which the changes in nervous system that enhance strength is referred as neural adaptation.(5)

And because of the muscular atrophy, it is rather impossible for the subject to perform compound movement like squats, presses, etc.

This method is quite similar to electrical muscular stimulation but the whole idea is :

- 1) To establish the mind and muscle connection
- 2) To educate the patient to move the joints at will, targeting at a specific muscle at the time of training, minimizing the assistance of synergistic muscle
- 3) To improve spinal connection and nerve conduction
- 4) To maintain flexibility and mobility through mobilization
- 5) Not to overindulge in excessive contractures by synergistic muscle groups which could lead to elevation of creatine phosphokinase, CPK.

Because one of the key diagnosis of polymyositis is measurement of muscle enzymes, particularly CPK. CPK leaks from the muscle upon muscular exertion or inflammatory myopathies as in polymyositis. Whether this form of training elevates CPK is still unconfirmed but the results and responses demonstrated by the subject is recommendable.

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