Effectiveness of Passive Stretching for Gastrosoleus on Growing Pain among School Children

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Abstract:

***Background*: Growing pain are one of the most common causes of recurring pain in the children's. It is a episodic benign pain described as spam in the legs and most commonly occur at night times. The calf region is more common because of involving activities while running, playing and also changes in anatomic factor like knock knee and flat feet that influence the calf region. Even though lots of studies have done to find out the prevalence of growing pain among school children. Hence the study is done.**

***Objective*: This study objective was to find out the effectiveness of passive stretching for gastrosoleus on growing pain among school children.**

***Methodology*: The study design was Quasi experimental and the study type is pre and post-test. 50 subjects between the age group of 8-12 years with the presence of intermittent pain in their legs were included in the study. The gastrosoleus muscle will be stretch passively to the children's in half-lying with regular intervals, then wong Baker scale will be noted for analysing the pain.**

***Outcome Measures*: Wong Baker scale, Growing pain questionnaire.**

***Results*: It is a significant improvement in passively stretch the gastrosoleus muscle on growing pain in children, by using the statistical analysis, it was done ($p<0.05$).**

***Conclusion*: The study concludes that there is significant effect on passive stretching for gastrosoleus muscle in school children.**

***Keywords*: Growing Pain, Questionnaire, Leg Pain, School Children.**

I. INTRODUCTION

The term Growing pain is commonly used in pediatric, that invoked the child experiencing a limb pain, it is one of the most common causes of recurring pain in the children. It is a non-inflammatory pain syndrome of early childhood that usually resolves with time. Children between the age group of 4 –12 years are more commonly affected[1].Growing pain is intermittent (non-articular) and bilateral, and is localized in the lower extremities (muscular bulk of thigh, calves).It occurs at night and resolves fully by morning. Diagnosis is based on the characteristic of the pain and a careful clinical examination[2,3] There is no clear mechanism describing the nature of growing pain. Growing pain includes factors such as: fatigue (overuse response in active children), anatomic factor (knock knee, flat feet), decreased pain threshold, reduced bone strength and other social stresses. The pain disappears as the child grows[4.] The systemic signs or symptoms as fever, weight loss, bleeding or night sweats are not associated with growing pain. Occasionally, it is accompanied by sensation of restlessness but not a tenderness, redness or local swelling[4.] In general, growing pains are still valid today; it is an idiopathic musculoskeletal pain occurring in childhood. Other theories suggests that the pain is a result of the bone growing faster than the tendons and muscles, thereby stretching the soft tissues. The greatest degree of growth in children doesn't occur in the period during which the prevalence of growing pains is highest. It is no doubt that children suffer from limb pains more than adults. It is hardly surprising that these pains have been dubbed " growing pains ". In fact, the'filling – out` intervals between two of the three periods of general and skeletal growth. Stretching is an important therapeutic and exercise training mechanism used for increasing the range of motion, enhancing the muscular coordination and increasing the blood circulation to the body. Improvement in soft tissue imaging and force measurement technology have only recently begun to allow biomechanical studies to document the mechanism of the effect of stretching on the muscle tendon and muscular performance When a group of muscles is passively stretched using techniques like static, dynamic or PNF stretching there may be some short – term changes in the muscles. Some mechanical variables like range of motion have been shown to be improved by stretching, while some appear to be unaffected (stiffness) and others are significantly reduced (strength). When you stretch, the muscle fibers are pulled out to its full length sarcomere by sarcomere, and then the connective tissue takes up the remaining slacks. When this occurs, it helps to realign and organize the fibers in the direction of the tension. This may help in improving the flexibility and reducing the muscle tightness and pain. Stretching primarily focuses on the major areas of body that helps with mobility, such as calf, hamstrings, hip flexor, and quadriceps. Growing pain questionnaire is suitable for the screening of growing pain among children aged 4 – 12 years in the general population. There are two main issues that remain unclear. At first the prevalence of growing pain among children varies considerably in different studies, depending upon the population, age of the children and the clinicals. The second

issue is the lack of definite epidemiological protocol for the diagnosis of growing pain in children with a complaint of leg pain (or) a screening questionnaire for the general population.

Aim of the Study

To find out the effect of passive stretching for gastrosoleus on growing pains among school children.

Need for the Study

Growing pain is more common in children between the age groups is 4- 12 years. it occurs in night and relives in morning. Stretching helps in reducing the pain and thereby increase the activities of the children .Most of the time parents are unaware about it and fail to understand the importance of it . Previous studies had been done to investigate and manage the pain to the children. Since the prevalence of growing pain is more among school children and mostly occurs in calf muscles, a study determining the effect of passive stretching on gastrosoleus muscle is lacking.Hence this study was done to create evidence, as no study prevails with Indian population to find out the effect of passive stretching among school children.

II. METHODOLOGY

The study design was Quasi experimental and the study type is pre and post-test. 50 subjects between the age group of 8-12 years with the presence of intermittent pain in their legs were included in the study. The gastrosoleus muscle will be stretch passively to the children's in half-lying with regular intervals, then wong Baker scale will be noted for analysing the pain.

Procedure

The children were selected based on the inclusion and exclusion criteria. The consent form was obtained from the parents after the clear explanation of the study. Growing pain questionnaire was provided to the children and selection was done according to the score. Passive Stretching will be done for 50 childrens and it will be recorded. The intensity of the pain was analyzed by wong Baker scale prior to the treatment. Making the child to lie in half - lying, then follow these steps :

The child lie in half –lying position with back support.

Place a small towel over the knee in a semi position

Grasp the patient heels with one hand, to maintain the subtalar joint in a neutral position and place your forearm along the plantar surface of the foot.

Then do dorsiflexion of the foot, and repeat with other leg.

The position was maintained for 60 sec with a repetition twice a day. The stretching was performed for 3 days a week for 5 weeks with a regular intervals. After the completion of 5 weeks Wong Baker scale were used to evaluate the pain scoring for determining the effectiveness of the treatment

OUTCOME MEASURES

WONG BAKER SCALE:

GROWING PAIN QUESTIONNAIRE:

III. STATISTICAL ANALYSIS

The IBM statistical package for social science (SPSS) version 20 for windows was used for data analysis. The statistical tool used in this study was paried ' t' test used for analysis of pre test and post test was conducted for selected group.

TABLE - I

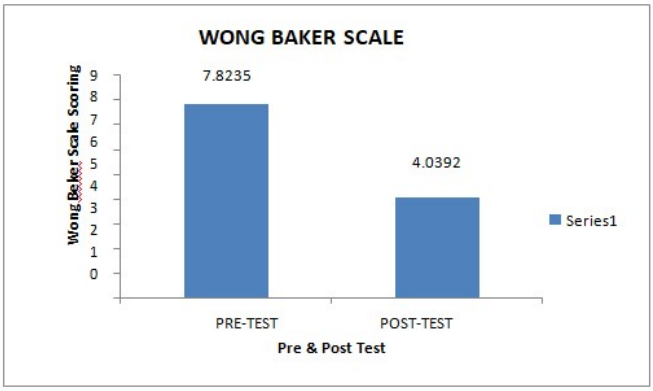
PRE- TEST AND POST- TEST SCORES OF WONG BAKER SCALE

	MEAN	**N**	**SD**	**t value**	**SIG**
VAS SCORING (PRE TEST)	7.8235	50	.99410	26.342	.000
VAS SCORING (POST TEST)	4.0392	50	1.11285		

There is a statistically significant ($p<0.05$) decreased. Table 1 shows that the pretest mean value (7.8235) of wong baker scale to post- test mean value (4.0392)

GRAPH – I

PRE-TEST AND POST-TEST OF WONG BAKER SCALE



IV. RESULTS

The table I and graph I shows that there is a significant difference between the pre- test value (7.8235) and post- test value (4.0392). This states that the reduction of pain was observed among children treated with passive stretching 3 days per week for a period of 5 weeks which shows an improvement in their quality of life.

V. DISCUSSION

There are lots of articles regarding growing pain and it's prevalence among people who are involved with overhead and non – overhead activities and so among school children. With lot of consideration those studies were performed and it has been proven that there will be large prevalence of growing

pain caused due to the over usage of the muscle. The growing pain has an unclear etiology, where factors explaining growing pain are fatigue (overuse response of the activities), anatomic factor (knock knee, flat feet) or psychological (it including the abdominal pain and headache). It is reported that there is a large effectiveness of growing pain in overhead activities as it involves overloading the gastrosoleus muscle and it results in repetitive strain in the muscle which leads to severe pain in the night. Hence, the purpose of this study is to find out the difficulty of children with growing pain in children while doing every day activities.50 children who are between ages of 4 to 12 years were taken into consideration according to criteria and were selected by growing pain questionnaire and passive stretching was performed. In those children who are between 4 to 12 age group, 36 children were of 9 years of age and 4 children were of 10 years of age. The passive stretching was performed in the children in a comfortable position. The result of this study shows that there is significant effect of passive stretching in gastrosoleus among children in the age group between 4 to 12 years and there is reduction of pain in the muscle. Walter As etal (1994)said that the restlessness leg syndrome (RLS) is a condition primarily of middle to older age. The typical RLS symptoms are leg discomfort and motor restlessness at night and relieves temporarily with rest. Clinically it can occur in childhood and adolescent period. Growing pain and attention deficit hyperactivity disorder (ADHD) are the differential diagnosis of RLS in childhood. Uziel Y, Hashkes PJ (2008) said the importance of progressively following the pain threshold of children with growing pain and to correlate the findings with their symptoms. Many children with GP tends to develop non –inflammatory pain syndrome later in childhood or adolescent. Cognitive behaviour therapy aims to prevent the progression to other symptoms in later life. Roth – IsigketiA, thyrn U, stoven H, schwarzenberger J, schmucker p. (2005) suggested that children and adolescent reported restriction in daily living activities, social contact, appetite and sleep as well as increase the implementation of health services because of their pain. These studies enhances the knowledge about the pediatric pain, enable the parents, teachers and health care professionals to assist the young people with pain management thereby allowing the young people to intervene positively in their condition before the pain becomes recurrent or persistent. So these studies are taken as consideration for this study to assess the growing pain by excluding and including a few criteria to assess the gastrosoleus muscle as they are actively involved with over activities and it was found that growing pain is present in the children.

VI. CONCLUSION

This study concludes that passive stretching of gastrosoleus muscle in children is effective in the management of growing pain in children. This study shows the achievement of a better relief with an increase in comfort and functional activity after treating with passive stretching. So there is a significant effect of passive stretching of gastrosoleus on growing pain in school children.

VII. LIMITATIONS AND RECOMMENDATIONS

The limitations of the study are sample size were small and home exercises were excluded . Further studies need to taken different age geroup and other outcome measures can be used.

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