Original Research Article

Biochemical marker changes benign hypermobility syndrome (BHMS)

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Abstract

Back ground: The joint hyper mobility syndrome is a condition that features joints that easily move beyond the normal range expected for that particular joint. Hyper mobility joints tend to be inherited. Symptoms of the joint hyper mobility syndrome include pain in the knees, fingers, hips, and elbows. Often joint hyper mobility causes no symptoms and requires no treatment. Treatments are customized for each individual based on their particular manifestations.

Aim of the study: To assess the biochemical changes that occur in patients with Benign Hypermobility Syndrome in a rheumatic clinic in south part of Chennai.

Materials and methods: The study was conducted from January 2016 - May 2016. Totally 50 young adults of age range between 17-34 who attended the rheumatic clinic with polyarthralgia and low back pain along with various other symptoms are included in the study. Detailed clinical history such as type of pain, duration of pain, musculoskeletal pain on various regions after activities of daily living are monitored and presence of BHMS was recorded using Modified Beighton Criteria. Biochemical investigations such as complete blood count thyroid profile, lipid profile, C - reactive protein, rheumatic factor were analyzed.

Results: Totally 50 patients were included in the study. Among the 50 patients, 23 were male and 27 were female. The age was around 17-35 yrs. ESR was found to be increased in 42patients. Fasting blood glucose was found to elevated in 12 patients. Hypothyroidism found in 3 patients. C-reactive protein found to be normal.

Conclusion: Asymptomatic biochemical abnormalities are not uncommon in patients with Benign Hyper mobility. These asymptomatic abnormalities pose a challenge to the general practitioners. Dyslipidemias could occur and decreased HDL cholesterol could partly attributed to decreased

physical activity due vague aches and pains. Surprisingly elevated ESR warrants further evaluation to rule out relevant causes. Decreased physical activity may contribute to obesity.

Key words

Benign joint hyper mobility syndrome (BHMS), Fasting blood glucose, Hypothyroididum, CRP.

Introduction

Joint hyper mobility syndrome can include a wide and diverse array of symptoms, but the muscles and joints are most often affected, giving the syndrome its name. People with JHS often develop chronic joint pain and stiffness, most often in the larger joints; for example, the joints of the neck, shoulders, back, hips, and knees. However, smaller joints such as the ankles, wrists, and elbows often are affected as well [1]. Joint pain often comes from the muscles and tendons around the joint rather than the joint itself, so that x-rays may be normal. People with hyper mobility syndrome may have a whole group of other conditions, in addition to joint problems, because of excessive stretchiness of other body tissues. For example, mitral valve prolapsed and uterine prolapse, hernias, and gastro esophageal reflux disease (GERD) are more common in people with hyper mobility syndrome. Some experts believe that JHS is the same thing as the hyper mobile type of Ehlers-Danlos syndrome (EDS), a condition also caused by extreme elasticity of body tissues. People with the hyper mobile type of EDS have loose joints and soft, velvety skin, as well as other symptoms almost identical to those described here. For most people, the distinction between joint hyper mobility, joint hyper mobility syndrome, and the hypermobile type of Ehlers-Danlos is not an important one clinically, as treatments are similar. Exceptions include more severely affected patients, such as those who require braces or surgery to stabilize their joints, or those who have unusual symptoms such as weakness or loss of feeling in arms or legs, and those with certain eye problems or a family history of aneurysms, all of whom if possible should see a specialist with knowledge of EDS, in part to rule out other more serious types of EDS [2]. Those considering having children may wish to see a clinical geneticist to see if they carry any of the known genes associated with Ehlers-Danlos, although many such genes have not yet been identified. Joint hypermobility syndrome, as the name implies, primarily affects the musculoskeletal system. Loose joints cause increased strain on nearby soft tissues (muscles, ligaments, tendons) that stabilize them. These soft tissues themselves often are overly lax, and because of their laxity and the increased strain on them, they are prone to tearing and spasm, leading to pain and stiffness around joints. The pain may or may not be clearly related to any specific activity [3]. For some, any repetitive movement, such as walking, lifting, or carrying can be painful. Standing or sitting for any period of time can cause stiffness and pain, as can something as simple as cleaning a kitchen counter or bending down to pick up laundry. Because of their role in stabilizing the trunk and the head, the neck and lower back are almost always affected. Chronic neck strain affects nearly every patient with JHS for two main reasons. First, the ligaments that are supposed to support the head are too loose and therefore cannot do their job well [4]. The muscles of the neck are forced to do more of the work of supporting the head than they are meant to do, so they become strained. Second, most JHS patients have shoulders that are too loose, that is the "ball" of the upper arm is not held tightly in the "socket" of the shoulder. Because of the weakness of the shoulders, almost any activity that uses the arm, including reaching, pushing, pulling, and carrying, pulls not only on the shoulder but also on the neck. For these two reasons, neck muscles are constantly being strained, and what little healing may occur overnight is promptly undone the next day [5].

Materials and methods

The study was conducted from January 2016 - May 2016. Totally 50 young adults of age range between 17-34 who has attended the rheumatic clinic with polyarthralgia, and low back pain along with combined symptoms are included in the study. Detailed clinical history such as type of pain, duration of pain, muscle skeleton pain on various regions on daily living activities are monitored and with the help of Modified Beightons Criteria. Patients with BJHS may have a family history of "double jointedness" or recurrent dislocations. Other presentations include easy bruising, ligament or tendon rupture, congenital hip dysplasia, and temporo mandibular joint dysfunction. Findings of the physical examination vary based on the joint affected. Pain in response to manipulation of the joint is Common. Mild effusions are not common but may be present. Clinically significant tenderness along with redness, swelling, fever, or warmth suggests inflammation and is not present in patients with BHMS.

Biochemical parameter analysis

Thorough systemic examination was carried out. Hemogram, urinalysis, fasting and blood sugar after 2 hour of major meal, HbA1c, lipid profile. Venous blood samples from all the subjects were collected in serum separator tubes after overnight fasting. The venous puncture was done in the cubital vein. Torniquet was used but was released just before sampling to avoid artificial increase in the concentration of serum lipids. Serum was separated within 2 hours of collection to prevent artificial changes in concentration of HDL. The blood was centrifuged at 5,000 rpm for 10 minutes. The supernatant clean serum was then pipetted out using dry piston pipettes with disposable tips and stored in dry thin walled vials at -20^0C until further analysis. Care was taken to exclude the hemolysed samples. The sera were analyzed for HbA_1c, FBS, TC, TG and HDL using an auto analyzer.

Results

Joint hyper mobility, defined as a more-than-normal range of movement (ROM) in a joint, is either localized (increased ROM of a single joint) or generalized. Joint hyper mobility depends on age, gender, family and ethnic background. A score of 5/9 or greater defines hyper mobility. Beightons criteria score among patients was as per **Table – 1**. Imbalances biochemical parameters of musculoskeletal complaints in rheumatic clinic were as per **Table – 2**.

Table – 1: Beightons criteria score among patients.

Patients number	Score of patients on physical examination
28	4/9
12	6/9
6	7/9
2	8/9
2	9/9

Discussion

Although hypermobility syndrome is a relatively common condition, it is a diagnosis of exclusion. Exclusion of more serious infectious, inflammatory, and autoimmune disorders presenting with painful or swollen joints can be aided by appropriate laboratory studies, including complete blood count, erythrocyte sedimentation rate (ESR), rheumatoid factor, antinuclear antibody (ANA) titer, and levels of serum immune globulin and complement. Such tests usually are not indicated in children who have hypermobility syndrome, and results are normal when the tests are performed [6]. Abnormalities in any of these tests, such as leukocytosis, increased ESR, or a positive ANA titer, suggest an alternative diagnosis. If there is joint effusion, aspiration of the joint fluid will reveal a noninflammatory pattern in patients who have hypermobility syndrome.For acute symptoms, patients should be advised to use nonsteroidal anti-inflammatory drugs (NSAIDs) or acetaminophen as needed [7]. A bedtime dose of a longer acting NSAID, such as naproxen, may benefit children who have nocturnal symptoms. Because the pathogenesis of joint

complaints in hypermobility syndrome is not related to inflammation, the effectiveness of NSAIDs for symptoms other than pain has been disputed. Moderate or severe symptoms may necessitate rest or abstention from activities that aggravate joint complaints. Physical therapy and hydrotherapy can provide additional relief of acute symptoms [8]. Chronic management of this condition typically involves several strategies, including explanation of the nature of hypermobility syndrome and the association between excessive joint movement and development of symptoms. Patients should be advised to identify activities that precipitate symptoms and to modify their lifestyles accordingly. Vigorous and repetitive activities, as performed during certain sports or hobbies, may underlie the symptoms and should be targeted as potential aggravating factor [9]. The use of NSAIDs or acetaminophen prior to such activities can help to control associated symptoms and facilitate participation [10].

Table – 2: Imbalances biochemical parameters of musculoskeletal complaints in rheumatic clinic.

Physical examination pain perception sites	**In male patients (n=23)**	**In female patients (n=27)**	**Total (50)**
Ideal weight	20	10	30
Over weight	10	6	16
Obesity	7	1	8
Elevated ESR	20	22	42
Elevated Fasting blood glucose	8	4	12
Hypothyroidism	7	6	13
C-Reactive Protein	No significant changes observed	No significant changes observed	0
Antinuclear antibody (ANA)	No significant changes observed	No significant changes observed	0
Elevated RF (Rheumatic factor)	6	5	11
Low HDL	8	9	17
High total cholesterol	10	8	18
Elevated Total triglycerides	17	18	25

Conclusion

Asymptomatic biochemical abnormalities remain an enigma to several physicians. Dyslipidemias, elevated ESR, decreased HDL cholesterol and endocrine abnormalities when encountered need aggressive perusal for finding out the exact cause. Routine screening of all young individuals with hyper mobility for asymptomatic laboratory parameter remains essential to identify and treat those conditions.

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