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Determination of the influence of motor habit in the form of wearing a bag on the formation and persistence of pain complaints of the injured glenohumeral joint

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ABSTRACT

INTRODUCTION

Pain within the glenohumeral joint is characterized as a limitation and pain when performing shoulder joint movements. Considering that this ailment is found in about 20-33% of the population, it seems to be important to investigate the factors that cause these symptoms. One of the reasons for the formation of pain syndrome may be an incorrect posture and overloading within the glenohumeral joint resulting from the habit of carrying the bag on one arm.

AIM OF STUDY

The aim of this study was to determine whether the motor habit in the form of wearing a bag is associated with the formation and maintenance of pain within the weighted shoulder joint.

MATERIALS AND METHODS

Applying the exclusion criteria, 126 women were qualified for the study (mean age 26 years ± 6 years). In order to determine the intensity of pain, the Visual Analogue Scale (VAS) was used. The surveyed women were asked to determine the time of occurrence of the length of pain and to provide anthropometric data such as weight and height. The following were used for statistical analysis: the Shapiro-Wilk test and the Kolmogorov-Smirnov test (with the Lilliefors amendment). Differences

were considered statistically significant if the test probability level was lower than the assumed level of significance ($p < 0.05$).

RESULTS

Despite the more frequent reporting of pain in the arm of the constantly inclined, the differences between the results did not reach the assumed significance threshold ($p = 0.060$), while the time of reported complaints in both cases was equal.

CONCLUSIONS

Motor habit in the form of carrying a bag is not associated with the formation and persistence of pain complaints of the loaded shoulder joint. Due to the low number of adult studies, research should be continued to understand the dependencies in this area.

Keywords: shoulder pain, musculoskeletal pain, carrying shoulder bag,

1. INTRODUCTION

Pain around the glenohumeral joint is the most common cause of musculoskeletal pain and is estimated to affect about 20-33% of the population[1]. This ailment is defined as limitation and pain during movements in the shoulder joint, which is an obstacle to the performance of motor activities[2]. Disorders in the shoulder may impair the ability to perform work and homework[3]. An example of what can be Sweden, where it is estimated that diagnosed shoulder pain is the reason for 18% of all claims for sickness benefit[2]. As a result, it can be a frequent cause of job loss and disability[4]. It is estimated that problems with the shoulder area account for 2.4% of all medical consultations, while in the USA there are around 4.5 million visits related to this problem annually[3]. Despite the fact that a significant part of people suffering from pain in the arm goes for consultation and treatment to a physiotherapist, prognosis says that in only 60% of cases we can talk about the resolution of symptoms within 6 months of consultations[5,6]. Many pain in shoulder joints also affect students wearing school bags and backpacks[7]. In young people, an additional problem is backache and scoliosis[8]. It may be the result of increased tension on the trapezius muscle and the erector spinae muscles on the side on which the persons carry the load[9]. Therefore, the occurrence of glenohumeral joint pain is a significant socio-economic problem[3].

Nowadays a women's handbag is undoubtedly one of the most common accessories among women. It has become one of the accessories that accompany life. This perception of her has often resulted in the bag reaching a considerable weight, worn on the shoulder for a significant part of the day. This issue is associated with the occurrence of fatigue, which, on the other hand, may destabilize the body's ability to sense and control the position of the joint through overworked muscles. Repeated muscle stresses lead to accumulation of injuries that can cause injuries related to muscle tension and bone load[10]. Therefore, a motor habit in the form of carrying a bag can be an important element in the development of shoulder pain.

2. AIM OF STUDY

The aim of this study was to determine whether the motor habit in the form of wearing a bag is associated with the formation and maintenance of pain within the weighted shoulder joint.

3. MATERIALS AND METHODS

The study group consisted of 190 women who were invited to the study to determine the impact of motor habit in the form of carrying a bag on the formation and persistence of pain in the loaded arm.

The research was carried out in accordance with the recommendations of the Declaration of Helsinki and with the consent of the Bioethics Committee of the Medical University of Lublin (KE-0254/251/2018), the respondents were informed about the

objectives of the study, were aware of the possibility of resigning from them at any time. All women surveyed gave written permission for the above research.

The following exclusion criteria were applied: any procedures performed in the shoulder area, fractured shoulder fractures and injuries of the thoracic and cervical spine, pregnancy, failure to determine the arm on which the patient always wears a bag, use of analgesics within 48 hours of the examination, any chronic or neurological diseases, BMI over 25.

After applying the above criteria from 190 people, 126 women were qualified for the study (mean age 26 years \pm 6 years). The study was conducted using the Visual Analogue Scale (VAS), the patients were also asked to determine the time of occurrence of pain (week and below week, 2 weeks, 3 weeks, 4 weeks and above) and physical examination during which anthropometric data were collected (weight, height) .

The comparison of data was compiled statistically and performed using the IBM SPSS STATISTICS 21 program. First, the normality of the variable distribution was verified using the Shapiro-Wilk test and the Kolmogorov-Smirnov test (with the Lilliefors amendment). When the distribution was close to normal, the Student's test was used, and when it was normal, the Mann-Whitney U-nonparametric test was used. Differences were considered statistically significant if the test probability level was lower than the assumed level of significance ($p < 0.05$).

4. RESULTS

The incidence of pain complaints of the weighted shoulder was 0.35 points. \pm 1 point VAS, while the incidence of pain complaints of the unloaded shoulder was 0.22 \pm 1 point. on the VAS scale. Differences between the results did not reach the assumed significance threshold ($p = 0.060$), however they were close to the statistical significance limit. The time of pain reported between the weighted and unloaded limb in both cases was equal and on average referred to as 'week and below week'.

5. DISCUSSION

The aim of our study was to determine whether the motor habit in the form of wearing a bag is related to the formation and persistence of pain in the glenohumeral joint. The results of our study clearly showed that the given factor does not have a significant impact on the occurrence of pain in the shoulder joint.

Confirmation of the results we obtained can be found in a study by Azabagic S. et al. that focused on the epidemiology of musculoskeletal disorders among children attending a school in Bosnia and Herzegovina[11]. These studies did not show any connection with the way the school bag was worn, although they showed a significant correlation between the occurrence of shoulder pain and the total weight of school bags, time handling a school bag and time of carrying the bag from school to home[11].

Analyzing the results of research carried out by Arghavani F. et al. we can see that the difference in the number of reported pain in the shoulders between students wearing backpacks on two arms and students carrying bags on one arm and the bag was $p = 0.301$ [7]. The above results may indicate that the way the bag is worn does not affect the etiopathology of pain[7].

The next study confirming our results are Dianat I. studies, which were carried out on a large group of children attending school[12]. The main subject of these studies was to determine the factors affecting the occurrence of shoulder pain, where, among other things, the correlation between carrying the bag on one arm and the occurrence of shoulder pain did not reach the statistical significance threshold ($p = 0.100$). It is worth noting that in contrast to the author's research in the work of Dianat I., the influence of individual factors on the specific sex of the respondents was not distinguished, which may influence the results[12].

Another study on the opposite results to the above presented work is study conducted by Khan R. The aim of the mentioned project was to determine the incidence of neck, back and shoulder pain in children who wear heavy backpacks[13]. A cross-sectional analysis carried out in this study indicated the occurrence of shoulder pain in the first place (up to 44.4%). What's more, the authors pointed out that students who carry a bag on both arms showed less symptoms. At the same time, pain was strongly associated with the weight of the school backpack, which may be the dominant factor in the development of pain[13].

A review of the literature on the presented topic suggests that the vast majority of research work focuses on the connection of pain in the spine and the habit of carrying a bag or a backpack on one arm. An example of such research may be the work of Bettany-Saltikov J. and Cole L. in which it was found that wearing both shoulder bags and hand bags may lead to scoliosis and back pain[8]. This is caused by the deviation of attitude in all directions. You can compare this work with research carried out by Hardie R. and In. in which through the surface electromyographic examination (sEMG) it was observed that carrying the bag on one arm would lead to increased tension both on the trapezius and the erector spinae muscles on the side of the bag[9]. By adopting the concept, as tensions can be transmitted through fascia and pain, this issue can be caused by the fact that pain instead of manifesting in the shoulder will appear in the area of the spine. This issue requires further expansion and testing in further studies[14].

6. CONCLUSIONS

Motor habit in the form of carrying a bag is not associated with the formation and persistence of pain complaints of the loaded glenohumeral joint. Due to the low number of adult studies, research should be continued to understand the dependencies in this area.

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