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Physical Activity in Prevention and Treatment of Vertebral Algic Syndrome

Aktywność fizyczna w profilaktyce i leczeniu zespołu bólowego kręgosłupa

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Abstract

Back pain is one of the most common reasons for doctor visits. The most common cause of back pain is muscle imbalance and movement disorders, which are the same as incorrect physical activity. It is also one of the most common causes of disabilities, as it affects mostly people of working age. Back pain affects about 80% of the population at least once in their life. The annual prevalence of back pain among the working age population is about 30 to 40%, 5–10% of these are due to incapacity and the same % of patients show signs of transition into a chronic condition (Piel. Zdr. Publ. 2012, 2, 4, 297–300).

Key words: motion, vertebral algic syndrome, pilates, stabilization, mobilization, prevention.

Streszczenie

Ból kręgosłupa jest jedną z najczęstszych przyczyn wizyt u lekarza. Powoduje go głównie obciążenie mięśni wywołane przybieraniem niewłaściwej postawy ciała. Bóle kręgosłupa są także jedną z najczęstszych przyczyn niepełnosprawności u osób w wieku produkcyjnym. Przynajmniej raz w życiu ból pleców odczuwa ok. 80% populacji. Roczne występowanie tych dolegliwości w populacji osób w wieku produkcyjnym wynosi 30–40%, a 5–10% osób z tej grupy ma dolegliwości charakterystyczne dla stanu przewlekłego bólu kręgosłupa (Piel. Zdr. Publ. 2012, 2, 4, 297–300).

Słowa kluczowe: ruch, zespół bólowy kręgosłupa, pilates, stabilizacja, mobilizacja, prewencja.

Vertebral algic syndromes are painful conditions that have their origin in the spine and adjacent structures. Exact etiology of vertebrogenic syndrome is difficult. It is estimated that an accurate pathological-anatomical diagnosis revealing the cause is not possible in up to 85% of patients with vertebral difficulties.

Vertebrogenic Algical Syndrome

Among the most important reasons of vertebrogenic problems are: injury of the musculo-ligamental apparatus, protrusion of the intervertebral disc, degenerative changes in intervertebral discs and in intervertebral joints, spinal stenosis,

compression of the nerve in the root canal at the calcification of the ligament, anatomical anomalies (spondylolisthesis etc.), system disorders (auto-immune disorders etc.) [1].

Diagnostics

Diagnosing patients with vertebrogenic back pains is often a long-lasting process. Because it is a problem appearing in various medical specializations, interdisciplinary consultation is often necessary, especially with a neurologist and with an orthopedist. One of main reasons why we are not able to affect diagnostically the insufficiently designated connection between the morphological and neurological findings and extent of subjective trou-

bles is insufficient knowledge of very complicated changes which we find at the clinical examination. It is necessary to value the results of helping and depicting examinations in the context of the case history and the physical examination [2].

Case History

Pain is a symptom which brings a patient to the doctor. Its exact specification is important and the main requirement is differentiation of the pain type. Within the framework of the case history, it is possible to distinguish inflammatory pain from noninflammatory pain. Inflammatory pain of the back is characterized by a gradual process, by emphasizing of pain without activity, it is typical also at night and, on the contrary, by alleviation of the pain after physical loading. Important is the data about the length of the pain permanency in relation to the time of the day, the presence of night pains and causing moments and reactions to activity.

Physical Examination

We begin the examination of the spine by an evaluation of the posture and walking of the patient. We search for asymmetry in the area of the pelvis and shoulders, we evaluate the physiological curvature of the spine; on the frontal level we evaluate the presence of scoliosis. At the pathological processes in lumbosacral area of the spine, it often does not come to the full rotation of the pelvis and its consequence are jerking motions and worse stability in turning round. We find out by the aspection contingent the presence of postraumatical or congenital deformities. We detect palpationally muscular spasms and their increased sensibility. In the standing position, we judge the extent of movements of lumbosacral spine in flexion, extension, lateroflexion and rotation. The most used functional tests for the development of the spine in particular sectors are the Thomayer's test, the Schober's test, the Stibor's and Otto's distance and the distance nape-wall.

Depictional Methods

In differential diagnostics, we have more depictional examinations at disposal which differ in their contribution to diagnostics and in radiational load. Also economical factors and being available play their important role in it. To the basic depictional methods belong conventional X-ray photograph and magnetic resonance. Ultrasonography or scintigraphy is less used [3].

Lifestyle and Forms of Motional Activities

The state of the spine is influenced by other factors, e.g. by the way of walking, sitting, sleeping, the type of our profession, eating habits, motional activities, but also by the extent of stress. Spine pain does not correspond with various illnesses, but mostly with such bad habits as incorrect bearing of the body. The pain can even increase because we are not sufficiently concerned with incorrect habits. Spine pains can have a short-term, but also a substantial character. Their causes are injury, muscular weakness and disbalance, incorrect exercising and heavy lifting, awkward motion, falls, but also the incorrect bearing of the body, lack of movement, sedentary job or long-lasting sitting in a bad position and also an improper mattress on which we sleep.

Stress and Sleep Disorders

Stress is mostly connected with spine pains, tonic musculature and sleep disorders. Stress affects our organism very negatively and in this way it causes blockade of our mind. Everything begins in our mind. Stress has a great influence on all reasons connected with spine pains. There are an increase of tension around the spine, what causes muscle stiffness.

Sitting

During the year we sit more than three thousand hours and mostly in an incorrect position. Depreciation and deformation of the spine limits dynamic sitting by which back muscles are activated. Currently, most people has sedentary jobs, in which is spine static. This is the biggest problem and it is very harmful. Therefore it is necessary to behave very gently. There are so-called ergonomic rules which concern, for example, the height adjustment of a chair, a table, the position of a monitor and of other computer components to grant as much comfort as possible for the spine. It is advised to change the phases of sitting with a short active movement to disengage the burdened spine. Sitting on a dynamic chair or on a fit-ball is also helpful.

Prevention and Motional Activities

We know several variants of the conservative treatment of the vertebrogenic algic syndrome.

Pilates. The method of Pilates is possible to realize in fitness centers on special supporting equipment. It is possible to train line-ups which use supporting and balance aids or on the pads without any special aids. The training system is well utilized especially for the reinforcement of the muscle corset, for activation of muscles creating the deep stabilizational system, compensation and prevention of muscular disbalances [4].

P-class aerobic. Strengthening variety of aerobic. It is more exacting for the muscular strength and persistence, but on the other hand, it is more simple for the coordination of the body and for the spacious orientation. At this training, other gymnastic exercises with the implements and without implements can be added and the general physiological efficacy of the training can be increased also in the program of the compound motional ability and the perseverant strength [4].

Feldenkreis method. The basis of this method is conscious perception and control of motions and positions of particular parts of the body. The training is oriented in perception of activities of particular muscles, in distinction of subtle motions, in perception of the changes of positions of particular parts of the body in space or in perception of the pressure of concrete parts of the body on the pad.

Biofeedback means “regressive report” of indirectly discernable physiological processes (for example muscles activities) with the help of the discernable signal. Presented function is registered by so-called bio-receptors which present it by the form of the electric potential. Then they are amplified and transferred into discernable (acoustic or visual) signals. By this way it is possible to check not only the body, but also the autonomous physical functions.

Relaxation techniques are an important part of the rehabilitative process. Relaxation is a state of the calm time beyond the motion when the tension of muscles is on the basal level, controlled by the regulation mechanism. Relaxation is connected with the inhibitional functions of the nervous system. A dominant role in the perception of the muscular tonus has the limbic system. At once it is an initiator of the motion and a centre of emotions. In the regulation of the muscular tonus participate also the pyramid and extrapyramid systems, cerebellum, vestibulum, reticular formations, spinal motor circle. Painless transmission of

nerve impulses from receptors to the brain center has an important role, because painful states increase the muscular tonus. It is possible to gain the relaxation by some techniques like by spontaneous relaxation, self-training, progressive relaxation or by yoga [5].

School of the Back

School of the back is a system which teaches the optimalisation of motions in various burdened situations, it serves to prevent and remove the pains of the motional apparatus. It prepares for the compensation of the static overloading of the motional system, for example, by a sedentary job, for the correct realization of lifting, work in the forward bend etc. The school of the back is oriented on the consciousness of one's own body, in the stretching of abridged muscles, in evoking muscular balance, in affect on proprioception, in affect on respiratory stereotypes, in the training of the most common motional habits and in the self-relaxation as a method of the stress control. An important part is the practice of correct sitting including the practice of dynamic sitting, practice of standing up, lifting and carrying of burdens, practice of standing and bearing of the body [6].

Stabilization, Mobilization System (SMS)

The basis of the method is SMS spinal stabilization of the spine, where hand movement activates oblique abdominal muscles and stretches the spine upwards, which compensates for a sedentary life, relieves stress, relaxes neck and neck and adjusts the range of motion in the shoulder girdle, which is usually blocked in inaccurate stereotypes body. Exercise significantly improves the function of internal organs (cardiovascular, pulmonary, gastrointestinal and urogenital system) by mechanical massage bowels and increases the activity of the immune system. Strengthening, stabilization, stretching, relaxation, coordination and balance training are part of each exercise. Individual exercises are carried out slowly, with low intensity, exactly, with attention to detail, with extensive movement of arms and legs in a standing position (as those with health problems can also perform exercises while seated), barefoot, and regularly. It is better to exercise slowly, with not so many exercises, than quickly and with many wrong exercises [7].

Prevention in Vertebrogenic Algic Syndrome

1. Not carry a heavy bag in your hand or draped over his shoulder.
2. Divide the load into two bags, wear proof rucksack.
3. When lifting heavier object does not buckle, flex your knees and lift it with a straight back.
4. Straighten your back when sitting, to be supported by the loin.
5. Comply with the rules of correct seating during long sessions are widely legs astride to 90 degrees, the same angle of the plantar animals with legs and thighs with the turn to make a 90 degree angle with the axis of the hull.
6. Wear comfortable shoes with optimal heel, in order to promote good posture when walking.
7. Raise the bed firm enough mattress may be too hard or soft.

8. Not to have unilateral burden on his back, inactivity, prolonged sitting at a computer and not to be overweight.

9. Do regular exercise by walking, running, swimming.

Conclusions

Patients with Vertebral algic syndrome represent a serious medical problem. Patients with the vertebrogenic algal syndrome represent a consequential medical problem. Their conservative treatment (medicamenal, infusional, rehabilitational) or operational treatment are temporally costly and financially very expensive. The training and the motional treatment are an active approach to the change of the lifestyle and in this way also to the elimination of these problems in the population.

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