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The Relationship of Low Back Pain during Pregnancy and the Role of Physiotherapy

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ABSTRACT

During pregnancy, women go through several changes in anatomy and functions that can cause painful conditions, especially musculoskeletal disorders. Low back pain is conceptualized as a symptom that affects the area between the lower part of the back and the gluteal fold and can radiate to the lower limbs. Therefore, the aim of this study is to address, through a literature review, the relationship between low back pain and the gestational period. Based on data collected from the literature review regarding the physiotherapist's approach to treating low back pain in pregnant women, regular physical conditioning, body awareness exercises, relaxation techniques, educational measures and postural guidance in daily activities are essential in the prevention, reduction or elimination of gestational low back pain, being extremely important for the woman's physical and emotional health.

INTRODUCTION

Pregnancy is the period that begins with the fertilization of the egg (female gamete) and sperm (male gamete) that through their organization of two haploid cells will unite and form only a single diploid cell, forming the morula, and later develop and lead to the formation of the fetus and even expel the fetus from the maternal body. Early identification of pregnancy is essential for quality prenatal care, enabling the monitoring of care aimed at promoting gestational health[1].

Low back pain is conceptualized as a symptom that affects the area between the lower part of the back and the gluteal fold, and can radiate to the lower limbs[2]. Its occurrence during pregnancy occurs in at least 50% of pregnant women, in the world population level and its diagnosis is made from the signs and symptoms that can be perceived by the pregnant woman or by the doctor[3].

This condition can accompany several limitations in different aspects of the pregnant woman's life. Regarding its clinical classification, low back pain is based on three distinct conditions, such as low back pain, posterior pelvic pain or a combination of both[4]. According to the literature, in a population of pregnant women who experience some type of low back pain, at least 20% of these women will remain with residual factors of the problem, weeks after delivery[1]. Therefore, the objective of the present study is to address, through a literature review, the relationship between low back pain and the gestational period.

LITERATURE REVIEW

Musculoskeletal Changes in Pregnant Women

During the gestational period, the woman goes through several changes in anatomy and functions that can cause painful conditions, especially musculoskeletal disorders[5]. However, other changes, including hormonal ones, have repercussions throughout the body, directly damaging the structure of the musculoskeletal system. The growth of the breasts and uterus occurs, which increases the weight and causes an overload in the pregnant woman's spine and pelvis, mainly in the lumbosacral region and in the thoracic region[6].

The increase in lordosis and the posterior inclination of the trunk are described as being common in pregnancy. The effect occurs due to the previous displacement of the center of gravity

compromised by the increase in weight. According to the classic description of the phenomenon, in order to maintain the projection of the gravitational center in the support area in an upright position, the pelvis tilts anteriorly and the thoracic region bends posteriorly[7].

The fact is that in the course of pregnancy, the postural change may have a direct relationship with the hormonal action of relaxin on the ligaments, the increase in the weight of the breasts and uterus in the lower part and the displacement of the center of gravity forward and upward, with this the spine will adjust to the increase in weight and the displacement of the center of gravity, increasing the curves of the cervical and lumbar spine[8].

The human spine allows an important function both in static posture and during body movements. During pregnancy, its characteristics are modified by a considerable increase in the weight of the abdomen, explained by the presence of the fetus, placenta and amniotic fluid and by hormonal action[7]. The appearance of back pain occurs with an estimated between 48 and 56% of cases of pregnant women, usually appearing from the fifth month. They tend to appear or worsen when the pregnant woman is standing or sitting for a long time. They may get worse with movement, and some may have difficulty walking or climbing stairs[5].

It is noted that the appearance of several postural changes during pregnancy is more and more frequent, with pain in the lateral regions of the neck and upper back. Often, muscles such as the trapezius and upper muscles of the cervical region may be tender or with trigger points, which can also cause muscle pain and tension, causing the restriction of lateral flexion and rotation movements[8].

There is also an increase in thoracic kyphosis and lumbar curvature, and there are also changes in gait with a considerable increase in the support base at the end of pregnancy. In addition, the appearance of postural pains such as low back pain is very common, especially in pregnant women who already had this complaint even before the gestational period[9]. Thus, the adoption of a daily regime of stretching and strengthening exercises during pregnancy is seen as a way to avoid discomfort in the lower back region[8].

Proof of this is that studies show that, on average, eight out of ten women may have pain in different areas of the body, such as the spine and pelvis at some point during their pregnancy.

Some authors observe the prevalence of low back pain, other authors separate the locations that present pain by region[6].

Gestational Posture and Center of Gravity of Pregnant Women

The center of gravity directly influences the change in the pregnant woman's posture. This tends to move forward, due to abdominal uterine growth and breast enlargement. In order to compensate for this displacement of the "forward posture", the body protrudes backwards (lumbar lordosis), increases the support polygon, the feet move apart thus causing a broader base and the shoulder blades move backwards[10]. a large part of the mass acquired during the gestational period is gained in the abdominal region before the line of gravity, due to the enlargement of the uterus and breasts causing an anterior displacement of the center of gravity, which results in greater instability, also causing greater stress on the muscles abdominal and lumbar region[9].

The posture of the pregnant woman is out of order, even preceding the expansion of the volume of the pregnant uterus. The whole body is thrown backwards, compensatory. The attitude adopted then is, involuntarily, that of someone who carries a heavy object while holding it, with both hands in front of the abdomen[11]. The appearance of back pain during pregnancy can be due to several reasons, such as fetal weight, hormonal factors, and also very important, the overload in the spine due to the increase in body weight, which will cause changes in the curvatures of the spine (increased lumbar lordosis and thoracic kyphosis, as well as pelvic tilt), and ligament relaxation[5].

As a way to compensate for the change in the center of gravity, the change in the lumbar region and the increase in abdominal volume, it appears to the accentuation of the curvature of the spine[5]. During the gestational period the woman shifts her weight back, and at the same time relaxes her abdominal muscles, there will be a tendency to walk with a swing, which can cause back pain. The characteristics of this kyphosis and lordosis posture are weakness in the anterior part of the neck, upper back and lower abdominal muscles and, often, shortening of the hip flexors, pectorals and lower back muscles[8].

When a postural balance occurs, there is a good distribution of body mass around the center of gravity, so the posture will exercise less joint stress and a decrease in the amount of muscle

activity that would be required if there was a disproportionate increase in body weight[8]. Computerized biophotogrammetry is a method that has shown significant efficiency in postural evaluations. With some advantages in its use, such as low cost in the imaging system and high precision; thus facilitating the work of health professionals. In addition, this method allows a quantitative analysis of the data in addition to presenting greater agreement on the results of assessments made by different examiners[9].

Pathophysiological aspects of low back pain

Low back pain results from mechanical problems of the spine in the vast majority of cases, with changes in its function and with pathological changes in the intervertebral discs, joints, vertebrae, ligaments, neural structures, muscles and fasciae. The change in active and passive joint mobility alters the functioning of motor control, causing changes in muscle tone, which can be expressed by spasms, weakness, pain or muscle histological changes[12].

The International Classification of Functioning, Disability and Health (CIF) model, proposed by the World Health Organization (WHO), provides a classification of functionality associated with health status. According to the ICF, the domain of body structure and function is characterized by the physiological/psychological functions of the body systems and by their anatomical parts[4].

The activity-related domain describes an individual's ability to perform a task or action in their daily routine. Low back pain patients often have difficulty picking up objects from the floor, going up and downstairs and walking. The objective of rehabilitation in patients with low back pain is to promote not only physical parameters, such as strength, flexibility and absence of pain but also to allow the improvement of functional status and the return to normal activities[12].

The Pilates Method and pregnancy

The Pilates method was developed by Jopeph Pilates in the early 1920s, with the concept of contrology, which means the conscious control of all muscle movements in the body. It is based on the correct use and application of the most important principles of the forces that act on each of the bones of the human body, by dimensioning the balance and gravity applied to each movement, in the active state, at rest and sleeping. The method has been showing positive effects when used in pregnant women. During the pregnancy period women seek this practice as an

alternative form due to the lightness of the movements, which allows relaxation and increased opening of the rib cage, due to breathing, in addition, it also works the abdominal muscles and the pelvic floor, there is prevention of abdominal diastesis and urinary incontinence[13].

This technique is characterized by movements designed so that the performers keep the spine in a neutral position, minimizing unnecessary muscle effort, preventing early fatigue and decreasing body stability. Aiming to improve the overall flexibility of the body, muscle strength, posture, coordination of breathing[14].

Pilates acts on the effects of pregnancy, providing the strengthening of the abdominal muscles, greater support for the abdominal viscera, allowing greater mobility of the spine, resulting in greater space for the baby. The stretching techniques generate pain relief, all movements are initiated from the abdominal muscles, improving circulation in this region which is also beneficial for the baby. Such exercises promote relaxation, having a calming effect[15].

This method has wide effectiveness, but there are contraindications that require changes and care[16]. Examples of these contraindications are the exercises in the second and third trimesters, which, in the supine position, are contraindicated, and should be performed in another posture[13]. Thus, given the contraindication of Pilates practice in the first trimester for pregnant women, it is advisable to postpone the start of the program until the fourth month, when the pregnancy is already safe, being essential to exercise gently at the beginning of the pregnancy when there are risks of abortion[15].

DISCUSSION

Novaes et al. (2006)[2] points out that during pregnancy, numerous changes occur in the woman's body: hormonal and biomechanical. In pregnancy, there is a need for the woman to adapt her posture to compensate for the change in her center of gravity. How a woman does this will be individual and will depend on many factors, for example, muscle strength, joint extension, fatigue and position models. As mentioned by Cortez (2012)[17] and Gonzales (2010)[3], the physiological changes during pregnancy that occur in the maternal organism are in the reproductive, digestive, respiratory, circulatory, urinary, nervous systems and also in the structures responsible for hormones.

Martins and Silva (2005)[6] states that the fact that pregnancy-related symptoms are associated with pain in the lumbar spine may explain the attempt to compensate for spinal curvatures to maintain body balance. Gomes et al. (2013)[4] highlights that its etiology is still not fully elucidated, and the most likely causes for its appearance would be related to the increase in the weight of the uterus, increased lordosis, alteration of the center of gravity, loosening of the muscles and hormonal, mechanical changes and vascular. Other possible etiologies discussed are general postural changes, pelvic insufficiency and direct pressure from the fetus and pregnant uterus on the nerve roots of the lumbosacral spine[9].

Gomes et al. (2013)[4] also points out that low back pain would be a symptom present prior to pregnancy, which would intensify during this period, with decreased mobility of the lumbar region in the clinical examination and pain on palpation of the lumbar paravertebral musculature and that the posterior pelvic pain it would be a characteristic low back pain of pregnancy, of intermittent nature with irradiation to the glutes and lower limbs, which would cause pain and movement block during gait and positive posterior pelvic pain provocation test. Unfortunately, despite being seen as a characteristic of the gestational period very little attention is paid to this symptom by health professionals. Thus, in order for effective preventive and therapeutic measures to be traced in their relief, it is essential that the physiotherapist knows how to make his clinical differentiation since these are conditions that require different treatments[10].

According to Stephenson and Connor (2004)[8] the physiotherapist has great importance in the treatment of gestational low back pain, and can also act in the treatment of patients with gynecological disorders, before and after gynecological and breast surgeries, performing musculoskeletal evaluations and treatment of obstetrics patients. This professional can also act as a support for labor, teaching therapeutic exercises to patients in the prenatal, postpartum and high-risk patients and after cesarean section.

CONCLUSION

In the gestational period, there are countless changes that can occur in the lives of women, changes that can last for some years after delivery when not treated. Based on data collected from the literature review regarding the physiotherapist's approach to the treatment of low back pain in pregnant women, regular physical conditioning, body awareness exercises, relaxation

techniques, educational measures and postural guidance in daily activities are essential in the prevention, reduction or elimination of gestational low back pain, being extremely important for the woman's physical and emotional health.

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