

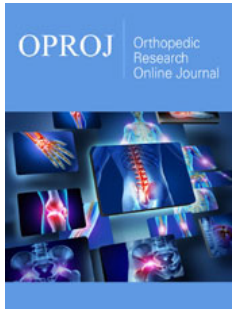
# Sindrom Rectus Abdominal Muscule

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## Abstract

The syndrome is caused by the compression of the anterior, final branches of the last 6 intercostal nerves /VI - XII/ in the sheath of the rectus abdominis muscle. It was first described under the name "Abdominal cutaneous nerve entrapment syndrome" by Applegate in 1972. In 1975, Komar and Varga introduced the name "Syndrome of the rectus abdominis muscle".

Six cases of compartment syndrome were studied, two of which were due to misuse of the telephone and the rest were due to trauma, stretching and twisting as sport injury, and prolonged time of overhead activities or lifting above shoulder place undue stress on the muscles as we can see in painting the ceiling.

**Keyword:** Sindrom nn. intercostales VI - XII - rami cutanei anteriores abdominales; Abdominal cutaneous nerve entrapment syndrome

## Anatomy

Rectus abdominis muscle originate from crest of pubic bone and insert to xiphoid process of the sternum and the costal cartilage of ribs 5-7, its function describes as assisting the flat muscles in compressing the abdominal viscera, the rectus abdominis also stabilizes the pelvis during walking, and depresses the ribs [1].

The ventral rami of the thoracic nerves are called intercostal nerve, because they are running in the intercostal spaces. Towards the anterior, the nerve comes to the middle of the intercostal space and runs there with blood vessels so that the vein lies superficial, followed by the artery, and the nerve lies deepest. The upper six intercostal nerves reach the sternum, and the lower six continue diagonally down into the abdomen. They break through the sheath and reach the white abdominal stripe between the oblique and transversus abdominis muscles, breaking through the sheath of the rectus abdominis muscle. The intercostal nerves are somatic 'mixed' nerves and give the muscle branches for the innervation of the surrounding muscles, and return with sensory information of the skin pleura, thoracic and abdominal wall.

The 6 intercostal muscles innervate the abdominal muscles, and from the skin branches they give the ramus cutaneous lateralis, which separates from the main nerve trunk and pierces the external intercostal muscles in the area between the axillary and medio-clavicular lines and innervates the skin of the lateral part of the trunk [2]. The final branches of the lower 6 intercostal nerves, rami cutaneous anterior abdominals.

## Etiology

It can be exposed to pressure from many reasons, including sitting bent forward for long periods of time, especially when using the smart devices in the wrong way, or it can be idiopathic, trauma thorax ,post-surgery od thorax and abdomen, stretching, post viral infection -herpes- ,as well Considering the involvement of the sensitive branch of intercostals nerve symptoms can be confused with ovarian diseases, gall bladder, duodenum or diseases of the urogenital system [3].

On its way from the exit from the spinal cord to the final branches in the wall of the rectus abdominis muscle, the intercostal nerve forms an irregular semicircle, and can compressed through the sheath of the rectus abdominis muscle especially at the point where the nerve breaks at a 90-degree angle.

According to Komar and Varga, if the so-called the process of occupying space in the abdominal cavity leads to an increase in the distance between two solid/fixed points of the nerve and to the stretching of the nerve itself. The strongest tension force on the nerve is at the point where the nerve breaks at a right angle, i.e. at the place where the rectus muscle abdominis acts to change the direction of the nerve stretching force. The mentioned authors notice such an occurrence in women during pregnancy. Heavy physical work which stresses the abdominal muscles can lead to the formation syndrome in that the contraction or tightening of the muscles exerts direct pressure on the nerve. nien Tung et al. warn about the consequences of operations on the abdomen or instability of the spine, which can lead to hyperactivity of the rectus abdominis muscle and cause pinching of the nerve in a typical place [4].

### Clinical images

Sharp burning pain tingling and numbness in the area of the rectus abdominis muscle is the main symptom of this syndrome. The main symptom is burning, sharp, or shooting pain. This pain may be around the ribs, upper chest, back shoulder and abdominal wall. The pain might feel worse even when doing gentle physical activities, such as deep breathing or stretching. It might also intensify when you laugh, cough, or sneeze.

Any movement that tightens the rectus abdominis muscle intensifies the pain, such as the transition from a lying position to a sitting position without the help of the arms, then coughing, and an increase in intra-abdominal pressure as in Waltz and Keene 197 experiments. there may also be neurological symptoms in the sense of a reduction in the sensation of touch, pain, vibration and discrimination of sensations from two points in the innervation area of the rami anterior abdominal cutaneous. Sometimes it can happen that the lower abdominal wall swells / protrudes in the area of pain se/. The reason for this is that the muscle becomes hypotonic and, as a result, it resists intra-abdominal pressure less. Symptoms can appear segmentally along the rectus abdominis muscle, depending on the affected nerve. Most often, a pressure

sensitive point can be found in a place where about 3 cm the nerve branch comes under the skin lateral to the navel.

According to Applegate /1972/, out of 62 patients with entrapment syndrome of the anterior intercostal nerves, 75% of the cases were women. All authors agree that the main symptom is burning or stabbing pain in the height of one or more segments, unilaterally or bilaterally, and when the anterior abdominal wall is tensed or contracted, the pain intensifies. The infiltration of a local anesthetic with corticosteroid at the site of a painful point can lead to a reduction or pain intensity, which also serves as a clinical test.

### Therapy

Treatment should primarily be to remove the cause of nerve stretching, i.e. the cause of increased intra-abdominal pressure should be eliminated. If the cause cannot be detected or eliminated, then reduced activity and local infiltration of corticosteroids with anesthetic should be recommended, twice per week for a period of one month.

### Conclusion

Through the research, we want to focus in adults on the period of using smart devices, as well as the time and its effect on the emergence of many diseases. It is important to distinguish between cases that were the result of misuse smart devices and cases of other diseases.

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