Diaphragmatic Tape for the Whole Abdomen

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Summary: The diaphragm has several important functions including its action as a respiratory muscle and also production of intraperitoneal pressure.

In this presentation, I will introduce a patient showing improvement of various commonly observed symptoms after use of diaphragmatic taping and discuss the efficacy of diaphragmatic taping. In addition, I will discuss the use of diaphragmatic tape in relation to the changes in global environment and the theory of evolution of mammals.

Emphasis of Presentation: Introduction of various taping techniques based on symptoms and individual differences and discussion of the importance of the diaphragm in the human body.

The diaphragm is a rounded membranous muscular tissue separating the thoracic cavity and the abdominal cavity. It works as a respiratory muscle by controlling the intrathoracic and intraperitoneal pressures. In addition, it is thought to be considerably involved in excretion, retention of posture, functions of abdominal organs and circulation of body fluid.

Focusing attention on the various functions of the diaphragm, the cases for which an approach with the diaphragmatic taping was attempted for symptoms frequently encountered were introduced, together with the variations of taping techniques, and the effects analyzed and discussed.

Case 1
Subject: A 24-year old woman whose main complaints were chronic fatigue in the neck and shoulder, fatigability, abdominal distension, small amount of feces and frequent defecations in a day (not diarrhea).

Findings: Hypertonic posterior cervical muscle, sternocleidomastoid muscle and intrinsic muscles of the dorsal and lumbar area, mild kyphosis, rotation of the upper body and elevation of the left scapular region were observed. In the abdominal pressure test, there was no localized tenderness, but reduction of abdominal pressure was observed. The result of muscle testing of the diaphragm (how long can you stop breathing) was 40 seconds.

Treatment: For the purposes of improving improper postures and normalizing the abdominal pressure, Kinesio Taping was conducted on the anterior diaphragm.

The methods of taping were as follows: 1) The center of the Kinesio Tape was fixed to the xiphoid process with the subject in the upright position. 2) The subject was put in a state of slight dorsal flexion while exhaling. 3) The Kinesio Tape was attached starting from the xiphoid process to the inferior horn of the rib at an intermediate tension on both sides.

Results: The result of muscle test after taping was 69 seconds, the abdominal pressure increased, and muscle tone was also improved. As for the improper posture, the curvature was improved in the sagittal plane, but rotation of the trunk and elevation of the left scapular region showed no large changes. This is thought to be because the difference in the muscle fibers in the right and left costal regions was not considered.

Case 2
Subject: A 22-year old man whose main complaint was lumbago due to a herniatedf intervertebral disk (L4-5). It is believed that he was injured in high school while participating in track club and throwing events. At the onset, pain was alleviated by conservative treatment, but he continues to have chronic dull pain in the lumbodorsal region.

Findings: At the screening, no marked finding was observed. Since he usually trains, there is a large amount of muscle. The greater pectoral muscle and the rectus muscle of the upper abdomen were hypertonic. The finger-to-floor distance was 9.8 cm, and pain at flexion was observed in the lower lumbar region at measurement. The result of the muscle test was 48 seconds.

Treatment: For the purpose of relieving the pain at forward flexion in the lumbar region, a posterior diaphragmatic Kinesio Taping was applied. 1) The patient was in the upright position. 2) He slightly bent forward while exhaling. An intermediate tension was put on the central 1/3 of the tape, the tape was attached to the level of Th12, and the outer 1/3 was attached as it was. 3) Three tapes were attached in layers.

Results: The muscle test was improved to 77 seconds, and the finger-to-floor distance extended to 17.5 cm. The pain at forward flexion at measurement did not appear. Tension of the lower ribs was observed.

Case 3

Subject: A 20-year old woman who had surgery for appendicitis 3 years ago. Since then, she has had a twitch-like pain at the sutured site, and the pain has increased recently. The affected suture site felt sore.

Findings: When she took a position of strong anteversion, the abdominal pressure tended to decrease, the sutured area showed pigmentation, and the surrounding area had a bad complexion. Subcutaneous induration and irregularity of the suture scar were observed by palpation. No tenderness was observed in the whole abdomen, and there was no particular gastrointestinal symptom. The result of the muscle test was 32 seconds.

Treatment: For the purpose of improving nutrition and circulation in the abdominal wall, an anterior diaphragm taping was applied, and a crenelated correction tape was applied locally. The anterior diaphragm tape was attached by a standard method. A star tape was attached locally.

Results: The photograph shows the conditions after application of Kinesio Tape for 3 days. The result of muscle testing at that time was 40 seconds. The complexion in the tissue surrounding the scar was improved, and pigmentation also became faint. The twitching pain was alleviated, and the skin and subcutaneous region became soft at palpation.

From the above results, we conclude that the diaphragm is closely involved in respiratory movement, retention of posture, mobility of the trunk and circulation and activity of the abdominal cavity and abdominal wall, and it can be said that therapeutic effects on various symptoms can be expected by application of Kinesio Taping.

Recently, we have seen an unexpectedly high number of young patients considered to have dystonia of the diaphragm. Why is the diaphragm interesting now? An theory was introduced in a recent TV program. It focused on the development of the diaphragm in mammals. Thirty thousand years ago, carbon dioxide in the atmosphere increased due to powerful volcanic eruptions, and global warming started. As a result of rising sea temperatures, and greenhouse effects due to enormous release of methane gas from the bottom of the sea, the global warming progressed rapidly and led to hypoxia on the earth at that time. The ancestors of mammals, born in an environment that originally had high oxygen concentrations, evolved the diaphragm for improving respiratory efficiency and acquired a new ventilation system. This system produced the abdominal pressure simultaneously, eliminated the abdominal ribs, acquired the space for viviparity and mobility of the trunk for lactation and achieved a system for growth and development unique to mammals. In addition, the diaphragm, as a supporting organ, helps in maintaining the upright position.

Air pollution, global warming and decreased oxygen are key words heard frequently in recent years. It is thought that the worsening of the global environment produced the diaphragm 30 thousand years ago and, conversely, induced overload/overwork of the diaphragm at the present day. It is thought possible to increase the homeostasis and to treat the human body in a broader sense by treating these conditions with Kinesio Tape. “Kinesio Tape saves the earth certainly.”