Fascia lata: Merely a thigh stocking, or a coordinator of complex thigh muscular activity?

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BACKROUND. The knee joint and its musculature has been the subject of a great deal of clinical interest [e.g. 1]. Regional anatomical descriptions mostly exclude the fascia lata, or are limited to studies on the attachments of the iliotibial tract and patellar expansions [1]. The fascia lata is cursory described as "a strong, dense, broad layer of fascia forming a strong cylinder around the thigh, investing the muscles like a stocking" (summery from [2] and others).

During routine dissections of the thigh in human cadaver specimens, it was noticed that the fascia lata is a dense sheet of fascia covering some of the muscles, and acting as an epimysial cover to other muscles in the same region. The objective of this paper is to report a previously undescribed arrangement of the fascia lata of the extensor compartment of the thigh.

METHODS. Ten human cadaver thighs of both sexes were dissected in detail. Fascial relationships to underlying muscles were carefully noted. Crossectional dissections were studied under dissection microscope (10x) to find out where fascia lata formed an epimysial cover to a muscle, and where it formed a separate fascial covering sheet.

RESULTS. In all the specimens the deep fascia was well defined. However, deviations from other descriptions were noted. Over vastus lateralis, the fascia forms a strong separate sheet with intervening fat and loose areolar tissue presenting between fascia and the muscle epimysium, whereas the fascia covering vastus medialis is thin and intimately related to the muscle, forming the epimysium.

DISCUSSION. Detailed study and description of the topographic relationships between the fascia lata and the underlying musculature is lacking. Our observations indicate that the interaction of the fascia lata and different parts of the quadriceps femoris constitute more than just a "stocking around the muscles." The intact fascia lata appears to be a vital component of the normal function of the knee and thigh muscle in the production of force. It is envisaged that the fascia lata is a "controller" and "creator" of pressure within the extensor compartment of the thigh during locomotion. Functionally, this would boost the power generating capacity of vastus lateralis so that it comes to constitute the "workhorse" of the extensor apparatus of the knee. Simultaneously, by utilizing the epimysial arrangement of the fascia lata over vastus medialis, this muscle may spread the load over larger areas for concentrated pressure production within the strong fascia lata cylinder around the thigh.

REFERENCES.

[1] Müller W. The Knee. Form, Function, and Ligament Reconstruction. Springer-Verlag. Berlin, Heidelberg, New York. (1983)

[2] Warwick R, Williams PL (ed.), Gray's Anatomy (35th ed.), Longman: Edinburgh. (1973) pp561-562