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Laryngeal Neuromuscular Spindles and their Possible Function

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The innervation and the mechanism of proprioception of the larynx present yet unsolved problems. In contrast to the striped muscles of the trunk and limbs, the laryngeal musculature arises from the unsegmented lateral plate mesoderm of the embryo: the mechanism of proprioception in laryngeal muscles, which have no antigravitary function, would therefore be different from that of the somatic musculature. However, muscle spindles and other afferent endings have been described in most of these muscles, especially near the joint capsules and ligaments.

During a histological study of the laryngeal muscles of human embryos, we found structures that we believe we can identify as spindle-like receptors: in particular we found two of them in the posterior cricoarytenoid and transverse arytenoid muscles of a 15-week-old fetus and another one in the transverse arytenoid muscle of a 16-week-old fetus.

Evidence of spindles in such a group of early developing muscles confirms the considerable role of intermuscular coordination within the laryngeal musculature, in which constant or nearly constant activity is a particular feature. This primary coordination at a laryngeal level is integrated with the activity of the respiratory extralaryngeal, pharyngeal, and oral muscles under nervous control of riverberation and servocontrol which is not different -essentially – from that which governs the other striated muscles. If there is

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