

Zusammenfassung

Bei Fütterung von Kühen mit einer Vitamin-E-freien Nahrung unter Zugabe von 0,1–1 ppm Selen in der ersten Woche wurde das Auftreten exsudativer Diathese 2–7 Tage hinausgeschoben. Es wird deshalb angenommen, dass die biologisch aktive Verbindung von Selen nur geringfügig deponiert wird.

Die von amerikanischen Forschern gefundene Schutzwirkung von Ethoxyquin gegen exsudative Diathese wird bestätigt.

Effects of Selective Intracranial Section and Stimulation of Vago-Accessory Roots

I. Afferent Fibers from Lungs and Aortic Area

The effects of intracranial section of vagal and/or accessory (bulbar and spinal) roots as well as of electrical stimulation of their central stumps have been studied in 23 normal or midpontine dogs with the following results: (i) Bilateral section of the vagal root causes the appearance of the typical respiratory patterns which normally follow bilateral division of the vagal common trunk, and completely abolishes the reflex responses to over-inflation and over-deflation of the lungs. However, bilateral section of bulbar and/or spinal accessory nerve roots does not influence the previous patterns of breathing either preceding or following bilateral section of vagal root, nor are the reflex responses to volume changes of the lungs affected. (ii) Both positive and negative respiratory effects induced by low (10–30/sec) and high (100–300/sec) frequency stimulation of the central stump of the vagal common trunk¹ are no longer present after intracranial section of ipsilateral vagal root, and are duplicated by stimulation (with the same parameters) of the latter, while stimulation of bulbar and/or spinal accessory nerve roots is without apparent effects on respiration, over a large range of frequencies and voltages. (iii) The hypotensive response evoked by electrical stimulation of the central stump of the vagal common trunk (more marked on the left side), due to the activation of depressor fibers coming from the aortic arch or subclavian artery, is completely abolished by intracranial section of the ipsilateral vagal root. Moreover, stimulation of the central stump of the bulbar accessory root fails to induce any circulatory effects.

The above results seem to indicate that the accessory nerve roots do not contain afferent fibers from the lungs or the aortic area. These enter the medulla only through the vagal root. The clusters of ganglion cells scattered along the accessory nerve roots² are probably concerned with the proprioceptive control of the striate muscles innervated by the external (spinal) and internal (bulbar) rami of the accessory nerve.

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Riassunto

Le radici bulbare e spinale del nervo accessorio non contengono fibre afferenti provenienti dal territorio polmonare e dall'area aortica. Queste entrano nel bulbo esclusivamente con la radice del nervo vago. Le cellule gangliari contenute nelle radici dell'accessorio sono probabilmente in relazione con il controllo propriocettivo dei muscoli striati innervati dai rami esterno (spinale) ed interno (bulbare) di questo nervo.

¹ A. LILJESTRAND, *Physiol. Rev.* 38, 691 (1958).

² C. U. ARIËNS KAPPERS, G. C. HUBER, and E. C. CROSBY, *The Comparative Anatomy of the Nervous System of Vertebrates, including Man*, Vol. 1 (The MacMillan Company, New York 1936), p. 589.

Effects of Selective Intracranial Section and Stimulation of Vago-Accessory Roots

II. Efferent Cardio-inhibitory Fibers

The effects of intracranial section of vagal and/or bulbar accessory roots, as well as of electrical stimulation of the peripheral stumps of these roots, have been studied in 21 normal or decerebrate dogs with the following results: (i) Electrical stimulation of either vagal or bulbar accessory root induces, at almost the same threshold value, a definite bradycardia; increasing current intensities lead on stimulation of either nerve, although more readily of the former to cardiac arrest. No effects on cardiac rhythm have been observed on stimulation of the spinal accessory root. (ii) The electrical stimulation of a rather large medullary area including the dorsal motor nucleus of the vagus nerve causes bradycardia or cardiac arrest, according to the current intensity and to the electrode position. After section of the ipsilateral vagal root, it is still possible to obtain, from the same points, cardio-inhibitory responses, though they are less marked. This residual effect is completely abolished by the section of the ipsilateral bulbar accessory root. (iii) In the normal animal, bilateral section of the vagal root completely releases the cardiac rhythm from the tonic inhibitory restraint, while bilateral division of the bulbar accessory root does not significantly affect it, either when it is performed before or after vagal root section. On the other hand, in those decerebrate preparations which displayed a marked degree of bradycardia, bilateral division of the bulbar accessory root was always followed by a conspicuous acceleration of the cardiac rhythm in both cases.

The above results seem to indicate that both vagal and bulbar accessory roots carry efferent cardio-inhibitory fibers, the former to a rather larger extent; those carried by the vagal root seem to be the ones primarily concerned in the maintenance of the so-called vagal tone in the normal animal while the accessory component seems to be, at rest, largely dispensable. During the severing of the vagal root, we cannot rule out the possibility of accidental lesions of the IX nerve root, as well, and of its proprioceptive fibers; this might explain the absence of cardio-inhibitory tone in the accessory bulbar root in the normal animal. But, whether the activity of the bulbar accessory root, observed in the decerebrate animal, is reflex (from the IX nerve) or automatic, it seems, in either case, to be the result of the increased activity of the cardio-inhibitory centre, probably due to a release phenomenon.

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Riassunto

Fibre cardio-inibitrici sono contenute non solo nella radice del X° nervo, ma anche nella radice bulbare dell'accessorio, seppure in grado minore. Mentre nel preparato normale le fibre cardio-inibitrici dell'accessorio non sembrano prendere parte al mantenimento del cosiddetto «tono vagale», nell'animale decerebrato sono responsabili, almeno in parte, del notevole grado di bradicardia che caratterizza questo preparato.