

2.

Morphology of Otolith-Activated Vestibular Neurons in Cats

(第二生理教室)

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The morphology of utricular (UT)- and saccular (SAC)-activated vestibular neurons (VNs) was studied by intracellular staining with horseradish peroxidase (HRP).

Of 13 UT-activated VNs, 6 cells were located in the middle part of the medial vestibular nucleus (MVN), 2 were located in the rostral part of the descending vestibular nucleus (DVN) and 5 were located in the caudal part of the lateral nucleus (LVN). Axonal trajectory of 2 VNs reached to the ipsilateral medial longitudinal fasciculus (ipsi-MLF). Three axonal trajectories crossed the midline but failed to follow. One projected to the spinal cord via the ipsi-MLF. The remaining neurons projected to the ipsilateral reticular formation just ventral to the vestibular nuclei. All UT-activated neurons tested had no axonal collaterals in the ipsilateral vestibular nuclei.

Thirteen SAC-activated VNs were stained and reconstructed. Seven of them were located in the rostral portion of the DVN, 5 were located in the caudal part of the LVN and 1 was located in the group f. Axonal projections of 3 SAC-activated VNs were studied. One neuron projected to the spinal cord via the ipsi-MLF and sent the axon collaterals to the medullary reticular formation and nucleus prepositus hypoglossi. An other neuron crossed the midline and the remaining neuron sent an axon latero-rostrally to the brachium conjunctivum without axon collaterals in the brain stem.

3.

末梢神経移植における Ischemic Preconditioning

(形成外科)

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【はじめに】近年, 先行する短時間の虚血が, その後の長時間の虚血に対する組織障害を軽減する ischemic preconditioning という現象が, 心筋, 肝臓, 腎臓などの組織で確認されている. しかしながら, 末梢神経移植における報告はいまだない. 今回, 末梢神経移植における ischemic preconditioning の有効性を検討した.

【方法】Sprague-Dawley 系ラット (200-250 g) にて, 片側の坐骨神経を 8 mm の長さで坐骨神経を血管茎とともに挙上, 血管茎を 20 分間クランプした後, 40 分間再灌流する ischemic preconditioning 処置を行った. この後, 血管茎を切離, 坐骨神経を元の位置に再縫合した (IP 群, $n = 10$). コントロールは, ischemic preconditioning 処置をせずに, 同部位の神経を切離, 元の位置に再縫合した (C 群, $n = 10$). 一週間後に各群 5 匹ずつ移植神経を採取し, toluidine blue 染色および TUNEL assay にて, 神経変性の状態を病理形態学的に検討した. 8 週間後に残りの各群 5 匹ずつの移植後肢の状態, 腓腹筋の重量による支配筋の筋萎縮の状態, 移植神経の toluidine blue 染色により神経再生の状態を検討した.

【結果】急性期神経変性 (1 週間後): toluidine blue 染色による変性有髄神経数は有意に IP 群に少なかった ($p < 0.05$). TUNEL 陽性細胞数も有意に IP 群で少なかった ($p < 0.01$).

神経再生 (8 週間後): 患側足趾の潰瘍形成, 足趾の壊死は IP 群で有意に少なく, 腓腹筋の萎縮も有意に IP 群で少なかった ($p < 0.05$). toluidine blue 染色による有髄神経数は有意に IP 群で多かった ($p < 0.01$).

【結語】以上の結果より, 末梢神経移植においても ischemic preconditioning は急性期の神経変性の軽減, 神経再生に有効である考えられた.