

High voltage electron microscopic findings of Purkinje cell dendritic spines

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Purkinje cell is only efferent component of the cerebellar cells. Dendritic spine is one of the interesting parts of the neuron. The spines shape and number varies according to status of the neurons. The shape and spine density of the Purkinje cell were evaluated in normal and several neuronal plasticity models by previous research work.

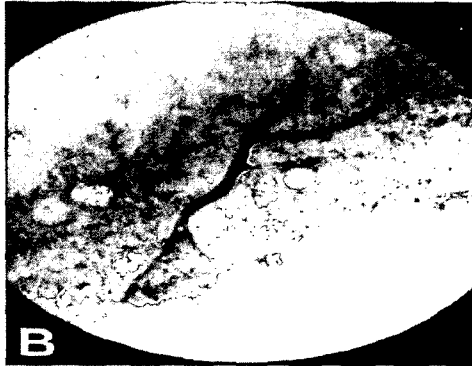
Recently, we found not only alteration of spines studding from Purkinje cell dendrite but also altered synapse between parallel fiber varicosity and Purkinje cell dendritic spines in the rolling mouse Nagoya, which is suffering from voltage dependent calcium channel α_{1A} subunit mutation. Exact quantitative information of the Purkinje cell dendritic spines is required to understand neuronal plasticity activities and evaluate possible therapeutic intervention such as thyrotropin releasing hormone and calcium channel antagonist which improve the clinical symptoms in tottering locus mutant mice.

As a trial approaches to analyze the purkinje cell dendritic spines, we compared resolution of some morphological methods such as immunohistochemistry, Golgi staining method, conventional transmission electron microscope, and high voltage electron microscope after immunostaining.

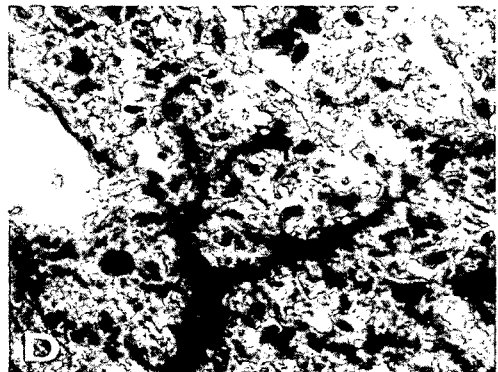
Although there was no difficulties to identify the dendritic spine qualitatively, how to increase contrast of Purkinje cell is considered to evaluate the spines quantitatively.



A



B



D