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MORPHOLOGICAL ANALYSIS OF THE ENTORHINAL CORTEX FROM AN EPILEPTIC PATIENT WITH A TUMOR

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Morphological Analysis of the Entorhinal Cortex From an Epi-leptic Patient With a Tumor. Charles E. Ribak, Stewart H. C. Hendry, Edward G. Jones, Ben H. Choi, James H. Geddes, Carl W. Cotman, and Les D. Cahan (University of California, Irvine, CA, U.S.A.).

A young girl with intractable epilepsy had a tumor removed from her left temporal lobe that contained the hippocampal formation and associated parahippocampal structures. It was immersed into fixative for light- and electronmicroscopic preparations. Light microscopy revealed a ganglioglioma in the entorhinal cortex where pyramidal cell bodies were apposed by tumor cells. The dentate gyrus displayed a decrease in the number of granule cells, whereas the CA1 region (Sommer's sector) was devoid of virtually all pyramidal cells. Cortical inter-neurons labeled with immunocytochemical methods were decreased in the entorhinal cortex and dentate gyrus. The basket plexus of axon terminals around pyramidal cells was labeled in CA3 but not in CA1 where the pyramidal cells were lost. Electronmicroscopic preparations of the entorhinal cortex showed a normal appearance of pyramidal cells and interneurons in tissue distal from the tumor. However, pyramidal cells within the tumor were apposed by numerous layers of reactive astrocytic processes and lacked symmetric axosomatic synapses. In contrast, asymmetric (excitatory) axodendritic synapses were found in the adjacent neuropil. These findings suggest that the projection neurons in this area have lost their inhibitory feedback control and may cause the loss of hippocampal neurons by their high physiologic a