particles decorated typical stellate amyloid plaques and the cell surface of numerous dendrites. In 263K hamster model, anti PrP antibodies readily decorated plaques composed of randomly oriented loosely arranged amyloid fibrils at the subependymal areas. Furthermore, PrP was readily demonstrated within secondary lysosomes of microglial cells situated at the plaque periphery. In this model neither stellate plaques nor PrP-immunodecorated dendrites were observed. In all models TVS-containing processes were readily detected and neither these processes nor TVS themselves were decorated with gold particles. Even if amyloid plaques were observed in a close contact with a TVS-containing neuronal processes, the plaques were decorated with gold particles while the processes remained unstained. TVS located in areas adjacent to plaques in the 87V model and in areas of diffuse PrP immunolabelling in ME7 were also unlabelled with anti PrP area.

Using immunogold techniques we were unable to label TVS with anti-PrP antibodies. As these technique proved to be sensitive enough to immunolabel not only amyloid plaques but also pre-amyloid accumulations of PrP, we strongly believe that the absence of staining reflects the real structure of TVS which are not composed of PrP. That TVS are PrP-negative may have several important implications for hypotheses trying to explain their nature. Principally, it falsifies the suggestion put forward by Narang (Intervirology 1993) that TVS are cross-sections of "thick-tubules" visualized by touch-preparations of scrapie-affected mouse and hamster brains. If PrP is the agent, TVS not being composed of this protein could not be the ultrastructural correlate of it. If, however, TVS turn out to be more than merely a useful ultrastructural marker for the whole group of transmissible spongiform encephalopathies, it may suggest that PrP and the agent are two separate entities.

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Dystrophic neurites in transmissible and nontransmissible cerebral amyloidosis

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Dystrophic neurites (DN) and amyloid plaques comprise the major neuropathological feature of both transmissible (GSS) and non-transmissible (AD) cerebral amyloidoses. The ultrastructural correlate of neurofibrillary tangles (NFT) of AD are paired helical filaments (PHF) composed predominantly of MAP tau (τ). Besides NFT, PHF are regarded to be a major constituent of neuropil threads and DN. Because τ-immunohistochemistry is so reliable method to detect PHF, and because electron microscopy is no larger that "fashionable", there is a trend to identify τ-immunopositive neurites with those DN defined on a basis of earlier ultrastructural studies. Using quantitative thin-section transmission electron microscopy, we report here that, unexpectedly, majority of DN in AD do not contain PHF and thus they resemble DN of GSS, a transmissible prion disease in which τ–immunoreactivity is absent, except for Indiana and Swedish families. As a result, these DN, albeit widespread, are hidden from τ-immunohistochemistry and are neglected by current neuropathological research. By thin-section transmission electron microscopy, we studied DN for the presence of PHF and lysosomal electro-dense bodies (LEDB). In AD, majority of DN (285 of 332) contained LEDB while only 91 contained PHF; 56 contained both structures. Of 141 DN associated with plaques, 126 contained LEDB, 42 contained PHF and only 27 contained both. Of 191 DN not associated with plaques, 129 contained LEDB, 20 contained PHF and 42 contained both structures. In CJD and GSS, all DN irrespective whether associated with plaques, or not contained LEDB. These quantitative EM studies indicated that majority of DN in AD and all DN in CJD and GSS contain LEDB and not PHF.

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Gliomatosis cerebri in a laboratory mouse

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Gliomatosis cerebri is a rare human neoplasm first reported by Nevin in 1938. This unclassified tumor has been reported as linked to Alexander disease and to von Recklinghausen disease (neurofibromatosis type I). It has never been observed in animals thus it seems interesting to report its occurrence in a laboratory mouse. The tumor diffusely infiltrated majority of the cerebral cortex and basal ganglia and practically replaced all the pre-existed structures. Immunohistochemically innumerable glial cells were GFAP-immunopositive.

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Immunoelectron microscopic studies of adhesion molecule expression in the developing mouse blood-brain barrier*

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Our previous studies indicated that the blood-brain barrier (BBB) in mice matures at approximately 14 days after birth, as indicated by permeability studies using horseradish peroxidase (Develop Neurosci 8:1, 1986). We have also recently demonstrated ICAM-1 upregulation in blood vessels from human brain tumor biopsies. In these studies, endothelial cell (EC) tubules were observed by immunoelectron microscopic examination (Brain Pathol, 5:339, 1995). ICAM-1 expression is though to play a key role for facilitation of cellular attachment of inflammatory and tumor cells to ECs. We wanted to know when adhesion molecule expression begins to appear in the developing mammalian brain micro- vasculature. Brains from Balb C/J mouse pups were either immersed- or perfused fixed with buffered aldehydes at varies ages in post-partum development. Employing a pre-embedding technique, slices of fixed brain cortex were immunoincubated in anti-mouse-ICAM-1 antibody followed by biotinylated secondary antibodies, labelling with streptavidin gold or peroxidase probes and examined by electron microscopy. Immunosignal for ICAM-1 were observed on the luminal EC surfaces in all animals from four days post-partum to adult. Although we do not yet know the exact time of ICAM-1 onset in these animals, our data seemingly suggest that the "immune BBB" appears to manifest prior to structural maturity of the BBB in mice.

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Age-depenedent changes in the claustrum of the dog

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According to various studies amyloid pathology may develop in the brains of aged dogs. This process is in some respect similar to that found in the human brain, therefore dogs may serve as model to investigate age-dependent changes in the human brain.

The claustrum is a telencephalic structure, connected reciprocally with almost all cortical areas, which is involved in various