

17 - Histological changes

Histological changes

© SPM Course 6. Schizophrenia

Gross changes □ A decrease in brain weight, brain length and volume of the cerebral hemispheres enlargement of the lateral ventricles (especially temporal horns) □ Reduced tissue volume in the thalamus, in temporolimbic structures including hippocampus, amygdala, parahippocampal gyrus. □ White-matter reductions in parahippocampal gyrus or hippocampus □ An increased incidence of a cavum septi pellucidi is noted. □ Basal ganglia volume reduction was noted especially in preneuroleptic era, in the catatonic subgroup. Enlargement of basal ganglia is now more common in schizophrenia as a consequence of treatment with classical neuroleptics, which can be reversed by the use of atypical substances. □ Schizophrenia-like psychosis is commoner in temporal lobe epilepsy when the focus is in the left hemisphere. □ The planum temporale, the posterior superior surface of the superior temporal gyrus, is a highly lateralized brain structure involved with language. In schizophrenic patients, a consistent reversal of the normal left-larger-than- right asymmetry of planum temporale surface area is noted. Heschl's gyrus (primary auditory cortex) showed no differences between the left and right sides.

Histological changes □ No evidence for astrogliosis in schizophrenia □ Reduced cell numbers or cell size has been described especially affecting neurons in the hippocampus and DLPFC. □ Increase in neuronal density, which may relate to the observed decrease in neuronal size (with decreased dendritic arborization and a decreased neuropil compartment) has been reported. □ Subtle cytoarchitectural anomalies were described in the hippocampal formation, frontal cortex, e.g. a significant cellular disarray in the CA3-CA4 interface □ Synaptic studies in the hippocampus and DLPFC in schizophrenia show decrements in presynaptic markers. These changes may reflect a reduction in the number of synaptic contacts formed and received in these areas and supports the hypothesis of excessive synaptic pruning in schizophrenia. □ Glutamatergic synapses may be especially vulnerable in the hippocampus and perhaps the DLPFC, with predominantly GABAergic involvement in the cingulate gyrus. □ Antipsychotics alter synaptic and neuronal morphology, particularly in the caudate-putamen and may increase glial density in the prefrontal cortex.

Revision #1

Created 2026-01-04 20:03:41 UTC by Omar Ayman

Updated 2026-01-04 20:03:41 UTC by Omar Ayman