

Poster presentation

Vasopressin neurons of the supraoptic nucleus are not activated in schizophrenia: an immunocytochemical and in situ hybridization study

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Background

Dysfunction in water intake and metabolism was reported in schizophrenia by many authors. Polydipsia, hyponatremia and water intoxication are enduring problems for a proportion of chronic inpatients. Water load tests suggested abnormal regulation of the activity of vasopressin (AVP)-synthesizing neurons in schizophrenia.

Material and Methods

In order to investigate the above hypothesis we studied the activity of the dorsolateral supraoptic nucleus (dl-SON) in the postmortem hypothalamus of 9 schizophrenic patients and 9 matched controls using immunohistochemistry and in situ hybridization histochemistry. For the available sample of schizophrenic patients, no information regarding polydipsia or hyponatremia was found in their medical case reports. The neuronal activity markers studied were: cell size, size of Golgi apparatus and expression of AVP mRNA followed by morphometric quantitative evaluation and statistical analysis using the Mann-Whitney non-parametric U-test. We also estimated the expression of tyrosine hydroxylase (TH) protein and mRNA since our previous studies showed increased TH-immunoreactivity in magnocellular AVP-synthesizing neurons of the human hypothalamus under clinical conditions of prolonged osmotic or nonosmotic stimulation.

Results

In our sample, no significant differences were observed in any of the neuronal activity markers between schizophrenic patients and controls. A strong positive correlation

was found between TH mRNA and AVP mRNA expression – both markers of neurosecretory activity – when all the cases were pooled together.

Discussion

Schizophrenia per se does not appear to increase the activity of magnocellular AVP-synthesizing neurons in the dl-SON of the material studied. Since our sample did not include documented polydipsic or hyponatremic cases, further investigation is needed to evaluate the above mentioned neuronal activity markers in this subgroup of schizophrenic patients. Brain material was obtained from the Netherlands Brain Bank (coordinator Dr. R. Ravid).