

THESES

STUDY OF THE HIPPOCAMPAL FORMATION AND OF THE CEREBROSPINAL FLUID IN HIV ENCEPHALOPATHY (ABSTRACT)*. **DISSERTATION. PORTO, 1998.**

*MARIA JOSÉ PONTES MARQUES DE SÁ ***

The acquired immunodeficiency syndrome (AIDS) presents, in most of the cases, neurological complications due either to the direct neurotoxic effect of the human immunodeficiency virus (HIV) or secondary to neoplasms and opportunistic infections. Among the former, the most frequent is the AIDS-associated cognitive/motor complex, which has been correlated to the appearance of cerebral atrophy, although the type and extent of neuronal suffering remain a controversial issue. Recent quantitative studies have shown a remarkable loss of neocortical neurons, while others, using traditional quantification techniques, have not found cell death in the hippocampal formation (HF). Taking into account the frequency of cognitive symptoms in AIDS patients, we decided to study the HF in this condition, as this region plays an important role in the processing of the cognitive information, namely in learning and memory. To evaluate the immunological behavior of the central nervous system, which is considered a sanctuary organ of the immune system and a possible virus reservoir, the cerebrospinal fluid (CSF) of seropositive patients was also studied.

The morphometric study of the HF was performed in necropsic material from two groups of male adults: 10 infected by HIV-1 and 10 age-matched individuals, whose material was used as control. Unbiased stereological methods, namely the optical disector and the fractionator, were used to estimate the total number of neurons from the major HF subdivisions: granule cell layer and hilus of the dentate fascia and the pyramidal cell layers of CA3 and CA1 regions of the hippocampus. The volumes of each subdivision, including the non-cellular layers, were calculated by applying the Cavalieri's principle. The mean neuronal nuclear and somatic volumes from the same neuronal populations were measured by the nucleator. Besides, in order to appreciate the HF cytoarchitectonical characteristics, the neuronal dendritic arborizations of those cells were qualitative and quantitatively studied using the Golgi method. This study was extended at the immunohistochemical level to better evaluate the neuronal degenerations (ubiquitine) and the gliosis (GFAB). We found a significant volumetric reduction in all HF subdivisions in AIDS patients, but without cell death. Nevertheless, the neuronal mean nuclear and somatic volumes were always lower in that group. Besides, important dendritic changes were observed in AIDS in all arborizations studied; these changes were more apparent in hilar basket cells and in CA3 pyramids. A reduction of the dendritic spine density in the granule cells and in the basal arborizations of the CA3 and CA1 pyramids was found. The immunohistochemical study did not reveal any changes between AIDS patients and controls.

The CSF analysis showed cellular and humoral abnormalities, irrespective of the clinical appearance of the neurological involvement, traducing intrathecal immune activation.

The marked HF cytoarchitectonical changes found in HIV encephalopathy contribute to explain the demential features, as each of them surely leads to dysfunction of HF circuitry. In fact, changes in all loops of the HF trisynaptic circuit were observed, which allow us to conclude that the information processing might be seriously affected compromising the basic mechanisms of learning and memory. Taking into account the maintenance of neuron numbers and the fact that the lesions found are potentially reversible, the occurrence of structural reorganization is thus possible, which deserves to be stressed due to the advances in retroviral therapeutics.

KEY WORDS: AIDS, HIV encephalopathy, hippocampus, cerebrospinal fluid.

* Estudo da formação do hipocampo e do líquido céfalo-raquidiano na encefalopatia por VIH (Resumo). Tese de Doutorado, Faculdade de Medicina da Universidade do Porto (Área: Ciências Morfológicas). Orientador: Manoel Maria Paula Barbosa.

** Address: Laboratório de LCR, Serviço de Neurologia, Hospital de São João, Alameda Professor Hernâni Monteiro, 4200 Porto, Portugal. E-mail: m.josesa@mail.telepac.pt

SURGICAL NEUROANATOMY OF THE ANTERO-LATERAL TEMPORAL LOBECTOMY (ABSTRACT)*. **DISSERTATION. BRASÍLIA, 1999.**

*NICANDRO FIGUEIREDO***

Antero-lateral temporal lobectomy is being performed in the treatment of several neurosurgical pathologies, mainly neoplasms, besides contusions, hematomas, ischemias, swelling, and other expansive lesions that affect

the temporal lobe. The resection of the temporal lobe usually seeks, besides removing the lesion, decompressing adjacent structures, particularly the brain stem. Although temporal lobectomy has been used for many decades in neurosurgery, the majority of publications emphasizes temporal lobectomy for the removal of medial structures of the temporal lobe in the treatment of epilepsy. Studies concerning antero-lateral temporal lobectomy were much more limited.

In this study, 50 hemispheres of 25 brains of human adult cadavers were dissected. A wide revision of the functional anatomy of the temporal lobe was done, and we performed the anatomical study of the cortical surface, followed by successive coronal cuts of the temporal lobe going 6 cm antero-posteriorly, in order to study its deeper anatomy. This way we obtained the measurements and made the analysis of different anatomical parameters of the temporal lobes and adjacent regions, on the surface as well as in the coronal cuts, followed by a simulation of antero-lateral temporal lobectomy in each coronal cut of the brain hemispheres.

The study allowed us to demonstrate the details, not adequately shown until now, of the surgical anatomy, including anatomical reference points, distances and ideal angulations for a satisfactory resection of the antero-lateral portion of the temporal lobe.

KEY WORDS: temporal lobe, temporal lobectomy, surgical neuroanatomy, temporal lobe lesions.

*Neuroanatomia cirúrgica da lobectomia temporal ântero-lateral (Resumo). Dissertação de Mestrado, Universidade de Brasília (Área: Neuroanatomia e Neurocirurgia). Orientador: Armando José China Bezerra. Co-orientadora: Yolanda Galindo Pacheco. ** Address: Rua G, nº 42, Edifício Nice, apto 43, Bairro Bosque da Saúde, 78050-160 Cuiabá MT, Brasil. E-mail: nicandro@zaz.com.br

ASPECTS OF IMMUNE AND INFLAMMATORY RESPONSE IN MUMPS MENINGOENCEPHALITIS: CYTOKINES QUANTIFICATION (ABSTRACT)*. **THESIS. RIBEIRÃO PRETO, 1999.**

*ALFREDO LEBOREIRO FERNANDEZ ***

In the period from April 1992 to November 1995, we studied 55 children from 2 to 13 years old, with the diagnosis of mumps meningoencephalitis, based on swelling of the parotid gland and epidemiologic evaluation, and confirmed by signs and symptoms of meningeal irritation, cerebrospinal fluid (CSF) findings, and by demonstrating of mumps virus antibodies in CSF samples. The average period of acute phase was 6.8 days, 3.3 days before and 3.5 days after hospitalization. Fever and headache were the most prominent and frequent symptoms. CSF showed on admission hypercytosis, 304 cells/mm³, and protein concentration increase, 56 mg/dL; four days later values found were 254 and 50, respectively.

Cytokines (IL-1 β , IL-5, IL-10, TNF α , TNF β and IFN γ) levels were immunoassayed (ELISA) and related with symptoms and signs duration, cell number, and protein concentration in the CSF. Median IL-1 β and IL-10 levels higher limit of detection of the assays were found, although isolated positive values occurred in all studied cytokines. IL-1 β and IFN γ concentrations were significantly correlated with acute phase duration and protein concentrations were also IL-10 levels correlated with the cell number in the CSF.

Recently, important activity of cytokines has been reported in viral diseases of the central nervous system. In mumps meningoencephalitis, our findings and other studies demonstrated intrathecal synthesis of viral antibodies by B lymphocytes, overexpansion of a subset of suppressor-cytotoxic T lymphocytes (CD8+), as well as immunomodulation by cytokines, mainly IFN γ and IL-10.

KEY WORDS: mumps, meningoencephalitis, cerebrospinal fluid, cytokines.

*Aspectos da resposta imuno/inflamatória na meningoencefalite pelo vírus da caxumba: quantificação de citocinas (Resumo). Tese de Doutorado, Faculdade de Medicina de Ribeirão Preto da Universidade de São Paulo. Orientadora: Maria Valeriana Leme de Moura Ribeiro.

** Address: Avenida Leopoldino de Oliveira 2733 / 900, 38015-000 Uberaba MG, Brasil.
