

THESES

THE PREDICTIVE VALUE OF THE TAP-TEST IN NORMAL PRESSURE HYDROCEPHALUS (ABSTRACT)*. **THESIS. CAMPINAS, 2000.**

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Normal pressure hydrocephalus (NPH) represents 1 to 12% of dementias. It is characterized by gait disturbance, progressive mental deterioration and urinary incontinence, associated with enlargement of the ventricular system and normal cerebrospinal fluid (CSF) pressure. In typical cases, gait disturbance is the first and most salient sign, followed by forgetfulness or mild dementia, psychomotor retardation, apathy and, later on, urinary urgency or incontinence. These cases present minor diagnostic difficulties and they are the most likely to improve after shunting. Differential diagnostic problems may, however, arise in some patients with atypical or incomplete clinical manifestations, as well as in patients with "subcortical" dementia such as Parkinson's disease, progressive supranuclear palsy and Binswanger's disease, which is the most common cause of the syndrome. In these cases, the results of computerized tomography (CT), magnetic resonance imaging (MRI) or radionuclide cisternography (RC) can be inconclusive or insufficient to establish a correct diagnosis and particularly to predict which patients will improve after shunting, hence the need to develop better methods for selecting patients to surgery.

Therefore, we introduced into our Department of Neurology (UNICAMP's Medical School) the CSF tap-test (TT), which consists of measurements of gait pattern and psychometric functions before and after the removal of 50 to 100 mL CSF by lumbar puncture (LP).

The first version of the test (TT-I; used from 1988 to 1995) covered gait (to walk 18 m as quickly as possible), visuo-motor speed (to move 60 cylinders from one place to another as fast as possible), visuo-constructive skills (to reproduce designs with matches or Kohs cubes), tactile memory (4 objects), visual memory (4 figures) and verbal memory (learning a list of 10 unrelated words).

The second version of TT (TT-II; used since 1996) tested gait (as in TT-I), verbal memory (learning 10 words), and postural reactions. Katz index was employed to evaluate activities of daily life. Neurological and neuropsychological investigation included: neurologic examination and careful history, CT (or MRI), RC, relevant blood and CSF tests. Mini-Mental State Examination (Folstein et al., 1975), Luria's Neuropsychological Investigation (Christensen, 1979), Global Deterioration Scale (Reisberg et al., 1982), CAMDEX (Roth et al., 1988), ICD-10 (WHO, 1992), and NINCDS-ADRDA criteria for "probable" or "possible" Alzheimer's disease (McKahn et al., 1984).

Sixty one patients with gait disturbance, mental deterioration and ventriculomegaly were studied. Thirly one of them had NPH and underwent ventriculo-peritoneal shunt surgery, with subsequent improvement in 24 (77.4%) of them. There were 3 false-positive and 2 false-negative cases. Nine patients (29%) had postsurgical complications, mainly subdural hematoma.

There was good correlation between the results of TT and surgery (ϕ coefficient = 0.51, $p < 0.01$), particularly with the second version of TT and gait test ($r = 1$, $p < 0.001$).

Short history, gait disturbance preceding mental deterioration, high cognitive scores, dilatation of temporal horns, and disappearance (or reduction) of cortical sulci on CT were associated with good outcome after shunting. On the other hand, in contrast to several other studies, we could not confirm periventricular hypodensity or knowing of the cause as prognostic favorable factors.

The additional predictive values of TT and RC were greater than that of combined clinical and neuroimaging data in 24% and 12% of operated cases, respectively.

Our findings concur with those of other authors on the high diagnostic and predictive value of TT, particularly in situations where the clinical and neuroimaging data are inconclusive and do not allow to take the decision to operate or not.

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TECHNICAL DIFFICULTIES IN THE MICROSURGICAL DISSECTION OF THE SYLVIAN FISSURE AND CISTERN: PROSPECTIVE IDENTIFICATION OF THE RESPONSIBLE FACTORS IN 152 ELECTIVE NEUROLOGICAL SURGERIES (ABSTRACT)*. THESIS. SÃO PAULO, 2000.

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The sulci, fissures and subarachnoid cisterns are natural pathways of circulation of the cerebrospinal fluid that may be used by the surgeon to reach deep regions of the brain and the skull base with little risk of damage to the neural vascular structures. Amongst these routes, the sylvian fissure and cistern is the most commonly utilized in the neurosurgical practice. Even though the technique is widely known, the surgical microdissection of these spaces is not always simple and even the most tenacious and experienced surgeon finds it difficult at times.

With the purpose of detecting the factors that might contribute to these technical difficulties during the microsurgical dissection of the sylvian fissure and cistern we have analysed 10 variables observed during 152 surgeries carried through the pterional route for the treatment of aneurysms of the anterior circulation. These variables were confronted with the dissection results. The surgical occurrence of extensive pial lesion and extended microsurgical dissection time (over 60 minutes) were considered as indirect evidence of technical difficulty during dissection and representative of a sylvian fissure and cistern difficult to dissect.

The analysis of the association between the result of the dissection and each of the variables separately has demonstrated that the percentage of sylvian fissure and cistern difficult to dissect was significantly higher in the patients that harbored a thick arachnoid membrane, in those with severe adherence between the frontal and the temporal operculae, in those where the sylvian cistern was virtual, and in those in which the superficial sylvian vein had a caliber greater than 3 mm. Nevertheless, when the multiple logistic regression technique was employed for the analysis of the effect of all the variables together on the possibility of a difficult dissection, only the first two were significant ($p=0.005$ and $p=0.015$ respectively).

The probability of a sylvian fissure and cistern difficult to dissect is approximately 2.76 times higher in those patients with a thick arachnoid membrane and 3.11 times higher when the adherence between the operculae is moderate or severe. Without the above two variables considered as risk factors, the probability of a sylvian fissure and cistern difficult to dissect is only 12%. On the other hand, when both factors are present the probability increases to 53%.

The occurrence of an extensive pial lesion or the necessity of a surgical time greater than 60 minutes to perform the microsurgical dissection, considered as representative factors for a sylvian fissure and cistern difficult to dissect, were not directly related to any clinical consequence. When we take into consideration the relevance of this finding and the paramount importance of the surgical microdissection for the opening of the sylvian fissure and cistern through the pterioneal route we may conclude that the technical difficulties that may be found during surgery are not per se a contraindication to the procedure.

KEY WORDS: sylvian fissure and cistern, microsurgical dissection, technical difficulties identification.

*Dificuldades técnicas na dissecação microcirúrgica da fissura e cisterna silvianas: identificação prospectiva dos fatores responsáveis em 152 cirurgias neurológicas eletivas (Resumo). Tese de Doutorado, Faculdade de Medicina da Universidade de São Paulo (Área: Neurologia). Orientador: José Píndaro Pereira Plese.

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THE USE OF ANTIGENIC PREPARATION OF *TAENIA CRASSICEPS* CYSTICERCUS TO DETECT ANTIBODIES IN NEUROCYSTICERCOSIS (*TAENIA SOLIUM*) (ABSTRACT)*. DISSERTATION. SÃO PAULO, 2000.

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The human taeniasis-cysticercosis complex represents an important socioeconomic and public health problem in developing countries, including Brazil. The most severe form of the disease is due to the localization of cysticerci in the central nervous system, i.e. neurocysticercosis.

Due to the difficulty in obtaining parasites from naturally infected swine, we studied an alternative source consisting of *Taenia crassiceps* cysticerci (heterologous antigen) for the search of anti-cysticercus antibodies in the cerebrospinal fluid (CSF) from patients with neurocysticercosis.

We studied the antigenic extracts of vesicular fluid of *Taenia crassiceps* cysticerci (VF-Tcra) and the purified fractions Conavalin-A (ConA-Tcra) obtained from an affinity column with lectin and fractionated glycoprotein (GP-Tcra) obtained from the VF-Tcra antigen by preparative electrophoresis.

The VF-Tcra, ConA-Tcra and GP-Tcra antigens for the detection of IgG antibodies were assayed by ELISA in CSF samples and by immunoblot in CSF and serum samples. A commercial ELISA kit with *Taenia solium* antigen was also used.

The sensitivity and specificity obtained for the VF-Tcra, ConA-Tcra and GP-Tcra were 100% in the ELISA test, with good reproductibility.

The peptides in order of frequency of reactivity with the VF-Tcra antigen were: 14-11 kD, (100%), 62 kD (100%), 68 kD (100%), 91 kD (76%), 25 kD (70%), 46 kD (64%), 18 kD (58%), 43 kD (23%), 9-8 kD (17%), 56 kD (11%), and 32 kD (11%). The following peptides, in order of frequency, were identified for ConA-Tcra antigen: 14 kD (100%), 28 kD (66%), 18 kD (55%), 46 kD (44%), 43 kD (22%), 94 kD (22%), and 103 kD (22%). Only peptides of 14-18 kD were identified for the GP-Tcra antigen. CSF samples from patients with schistosomiasis did not show reactivity with the antigenic extracts and a CSF sample from a patient with neurosyphilis presented strong reactivity with the low molecular weight (≤ 20 kD) peptides for the three antigens also in the commercial ELISA with the *Taenia solium* antigen.

The results confirm that *Taenia crassiceps* antigens are important alternative sources of antigenic extracts. The glycoprotein fractions proved to be efficient in detecting anti-*T.solium* antibodies in CSF and serum samples from patients with neurocysticercosis.

KEY WORDS: cysticercosis, cerebrospinal fluid, *Taenia crassiceps* cysticercus antigen.

*Utilização de preparações antigênicas de cisticercos de *Taenia crassiceps* para pesquisa de anticorpos na neurocisticercose (Resumo) Dissertação de Mestrado. Faculdade de Ciências Farmacêuticas da Universidade de São Paulo (Área: Análises Clínicas). Orientadora: Adelaide José Vaz.

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