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Acalculia within brain damage patients: Normalization and validation of a numerical cognition evaluation tool (ECAN)

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Numerical cognitive disorders in brain lesion patients were less studied than aphasia. In 1929, Berger distinguished primary acalculia from secondary acalculia due to other cognitive disorders. Hecaen et al. (1961) proposed to differentiate three syndromes: aphasic acalculia, spatial acalculia and anarithmetia. Then, different cognitive model were developed: Deloche and Seron (1982); McCloskey and Caramazza (1985); Dehaene and Cohen [1]. Their influence on clinical literature will be discussed.

No tool in French Language was available in reference to these cognitive models. We adapted and modified the Number processing and calculation from Delazer et al. [2]. This new tool is made of 37 tasks organized in four categories (A. Numbers; B. Transcodage; C. Calculation; D. usual knowledge). Measures concerned both performance and duration of the task. The normative data concern 423 healthy controls (195 men and 228 women) of four age groups (18–39 years, 40–54 years, 55–69 years, > 70 years) and three educational level groups. A group of 49 patients with Alzheimer disease was evaluated. There are differences between patients and 89 controls for most of the task, both for performance and duration. The anatomico-functional model of Dehaene and Cohen (Triple code, Dehaene, 1992) suggests an analogical system and a symbolic system, more related to language. Their uses in clinical practice have not been frequently evaluated. In a stroke patient study, we found that this distinction seems clinically relevant. This lead to consider modular dissociation in some cases that will be presented.

References

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History of traumatic brain injury among prisoners: Preliminary results of a prevalence survey

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Introduction.– Traumatic Brain Injury (TBI) can be responsible of cognitive, behavioral end social difficulties. A Finnish controlled study published in 2002 [1], has highlighted that a history of TBI in childhood or adolescence was significantly associated with psychiatric disorders and crime in male subjects. A descriptive qualitative and quantitative study has been conducted at Fleury-Mérogis state prison between November 2, 2012 and January 31, 2013.

Objective.– The objectives of this study were:
– to establish the prevalence of self reported TBI in a prison population;
– to compare the prevalence of TBI among incarcerated population and the general population;
– to study the links between TBI, epilepsy and incarceration taking into account the age of onset of the TBI.

Methodology.– A questionnaire was completed by a nurse or a doctor with all the subjects entering the custodial system (on voluntary basis) at Fleury-Mérogis state prison. The questionnaires were completely anonymized at the time they were filled.

Results.– One thousand one hundred and ninety-six questionnaires were collected. Forty-eight of them had to be removed due to a refusal to participate or incomplete information more often because of the language of the detainee. One thousand one hundred and forty-eight questionnaires were analyzed with a population of 934 men, 88 women and 69 juveniles (boys and girls). The overall prevalence of reported history of TBI in this population was 30.6%. The two most common causes of TBI were road accident and fights. Seventeen percent of those who reported a history of TBI are followed by a medical doctor.

Conclusion.– The preliminary results of this survey should have consequences such as improvement of screening in this population and better follow up.

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