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ORIGINAL ARTICLE/ARTICLE ORIGINAL

Diagnostic accuracy of neurophysiological criteria for early diagnosis of AIDP: A prospective study

Précision diagnostique des critères neurophysiologiques pour le diagnostic précoce des PRNA : étude prospective

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Summary
Objective. — To assess the diagnostic accuracy of electrodiagnostic (EDX) criteria for the early detection and characterization of Guillain-Barré syndrome (GBS) in clinical practice.
Methods. — We conducted a prospective study in patients referred for an EDX exam with clinical suspicion of GBS. We evaluated four sets of neurophysiological criteria and four neurophysiological tests among those recently proposed for the early diagnosis of GBS.
Results. — We recruited 84 patients. Acute inflammatory demyelinating polyneuropathy (AIDP) was the final diagnosis in 23 patients. No axonal forms were found. The best sensitivity was obtained using Rajabally et al.'s criteria (82.1%), whereas the specificity was 90.0% for Ho et al.'s and Hadden et al.'s criteria and 100% for the Dutch GBS study group and Rajabally's criteria. Regarding the neurophysiological tests proposed for early diagnosis, the sensitivity ranged from 16.6 to 100%, whereas specificity ranged from 73.1 to 98.3%.
Conclusion. — The Dutch GBS study group and Rajabally et al.'s criteria showed an optimal combination of sensitivity and specificity for clinical practice, although with a slightly higher

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sensitivity for Rajabally et al.'s criteria. None of the neurophysiological parameters recently proposed for early diagnosis have good diagnostic accuracy for clinical application.
Significance. — In a real clinical setting with patients referred by neurologists and emergency doctors, an EDX study performed within a week of symptom onset supports the diagnosis of AIDP in 82% of cases.

MOTS CLÉS
Électroneuromyographie ;
Étude de cohorte ;
Polyradiculoneuropathie aiguë inflammatoire démyélinisante ;
Syndrome de Guillain-Barré

Résumé
Objectif. — Déterminer la précision diagnostique des critères électroneuromyographiques (ENMG) pour la détection et caractérisation précoce du syndrome de Guillain-Barré (SGB) en pratique clinique.
Méthodes. — Nous avons mené une étude prospective chez des patients adressés pour un examen ENMG avec une suspicion clinique de SGB. Nous avons évalué quatre séries de critères neurophysiologiques et quatre tests neurophysiologiques parmi ceux récemment proposés pour le diagnostic précoce de SGB.
Résultats. — Nous avons recruté 84 patients. Une polyradiculoneuropathie aiguë (PRNA) inflammatoire démyélinisante était le diagnostic final chez 23 patients. Aucune forme axonale n'a été trouvée. La meilleure sensibilité a été trouvée pour les critères de Rajabally et al. (82,1 %) tandis que la spécificité était de 90,0 % pour les critères de Ho et al. et Hadden et al. et de 100 % pour les critères du groupe d'étude néerlandais des SGB et ceux de Rajabally et al. En ce qui concerne les différents tests neurophysiologiques proposés pour le diagnostic précoce, la sensibilité variait entre 16,6 et 100 %, tandis que la spécificité variait entre 73,1 et 98,3 %.
Conclusions. — Les critères du groupe d'étude néerlandais des SGB et ceux de Rajabally et al. ont montré une combinaison optimale de sensibilité et de spécificité pour la pratique clinique, mais avec une sensibilité légèrement plus élevée pour les critères de Rajabally et al. Aucun des paramètres neurophysiologiques récemment proposés pour le diagnostic précoce ont une bonne précision diagnostique pour une application clinique.
Signification. — Dans un contexte clinique de la vraie vie avec des patients adressés par des neurologues ou des urgentistes, une étude ENMG effectuée dans la semaine qui suit l'apparition des symptômes permet le diagnostic de PRNA dans 82 % des cas.

Introduction

Diagnostic criteria of Guillain-Barré syndrome (GBS) are essentially based on clinical signs and symptoms, because instrumental and laboratory tests may be negative in the first days of disease development [5,9]. In fact, the neurophysiological parameters and cerebrospinal fluid (CSF) are considered to be adjunctive laboratory tests that support the diagnosis [5] or tools that increase diagnostic reliability [9]. To date, there are no internationally approved electrodiagnostic (EDX) criteria. This is mainly due to a lack of diagnostic accuracy for all of the sets of the criteria proposed. Indeed, even the most sensitive neurophysiological criteria do not reach 100% sensitivity and do not have satisfactory specificity in the first days after disease onset [1]. For this reason, other neurophysiological parameters have been recently proposed for the early detection of GBS [3,8,15,18,22]. To investigate these, we prospectively recruited all patients referred for an EDX evaluation because of medical history and clinical suspicion of GBS, in order to estimate the diagnostic accuracy of Ho et al.'s [11] and Hadden et al.'s criteria [10], those of the Dutch study group [14], and those more recently proposed by Rajabally et al.'s [16]. In this same group of patients, we also tested the sensitivity and specificity of the presence/absence of the H-reflex, the presence of A-waves, the sural sparing pattern, and the increased duration of the distal compound muscle action potential (CMAP) [3,8,15,18,22]. Another EDX evaluation was performed two weeks after the first EDX to reach a more precise diagnosis of the subtype of GBS and to evaluate prognosis. The reference standard of the GBS diagnosis was the clinical evaluation including laboratory data [5].

Patients and methods

Study population

We conducted a prospective study including all the consecutive patients referred to the EDX laboratory of Careggi Teaching Hospital (Florence, Italy) with clinical suspicion of GBS. One of the authors (M.S.) carefully reviewed the patients' charts and collected the following data: the number of days since symptom onset, the presence of febrile illness or signs of infection prior to the onset of symptoms, the duration of the progression of symptoms, the presence of other dysimmune or metabolic diseases, possible causes of polyneuropathy, and the presence of lower back pain prior to or concomitant with symptom onset [21].

Clinical data

Before the EDX exam, one of the authors (R.C.) performed a neurologic examination, including the muscle strength