

ELECTROMYOGRAPHICAL FINDINGS IN HUMAN CHRONIC CHAGA'S DISEASE

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It is a well-known feature that losses of neurones occur in the autonomic and central nervous systems in human and experimental Chagas' disease ^{2,3,4,5,6,12}. However, only a few reports have appeared in the literature regarding the lower motoneurone state in acute Chagas' disease ⁶ and in experimental chronic Chagas' disease ^{9,11}, while no mention has been made yet of the state of the motor unit (m.u.) in human chronic Chagas' disease.

In this investigation we have set out to explore the m.u. behaviour in human chronic Chagas' disease by employing conventional electromyography (EMG) in order to obtain enough data to justify the employment of other more electrophysiological techniques.

MATERIAL AND METHODS

Eighty patients were studied. Their ages ranged between 15 and 58 years. On clinical and laboratory grounds they were judged to be healthy, being the only abnormality detected the presence of at least two positive out of three serum tests for Chagas' disease. None of them have been previously submitted to specific treatment.

Unrelated causes of muscle denervation were excluded by rejecting patients over the age of 60 ^{1,8} and any who had had metabolic or toxic disorders known to be associated with neuropathy.

All patients were studied electromyographically. For this investigation coaxial needles (Disa, type 90113K0031) were used to sample the electrical activity induced in deltoid (d), biceps (b), abductor pollicis brevis (apb), vastus medialis (vm), tibialis anterior (ta) and extensor digitorum brevis (edb) muscles by volitional contraction. The densities of the interference patterns during maximum effort were analyzed subjectively and any spontaneous discharges at rest were noted.

The action potentials of fibres recruited during weak effort were fed through a low noise amplifier and displayed on a Akonic (type 408) electromyograph. Potentials were regarded as probably neuropathic if they possessed more than one of the following characteristics: long duration, poliphasic or fragmented configuration and enlarged amplitude.

RESULTS

A reduced interference pattern was found in 63 patients: 34 of them had a diminished interference pattern in all the muscles explored, while the remaining 29 showed in 2 to 4 muscles a full interference pattern (Table 1).

In those muscles which showed a reduced interference pattern most of the remaining potentials were fragmented or polyphasic and had long duration, some of them had a very enlarged amplitude. This last sort of potentials could be seen, in variable proportion, in all the muscles studied, but mainly in vm and ta (> than 8 mV).

Neither fibrillations nor positive sharp waves were recorded in any patient.

Muscles	D	P	L.A.
d	8.8	61.2	17.5
b	17.9	62.7	23.9
apb	8.5	65.8	24.4
vm	34.3	85.7	54.3
ta	32.4	88.7	35.2
edb	54.2	93.5	34.7

Table 1 — *Electromyographic findings (% of patients): D = diminished interference pattern; P = polyphasic or fragmented potentials; L.A. = potentials of long duration and enlarged amplitude.*

DISCUSSION

The characteristic features of the studied patients were that all of them had positive serum tests for Chagas' disease and none had any sign or symptom which could be interpreted as due to involvement of the nervous system or any other organ. In fact, all them appeared to be healthy and had normal active lives.

However, the EMG investigation showed that most of them had some old and chronic denervation which affected muscles in the upper and lower limbs, which appeared to be subclinical since no patient complained of weakness and no clinical sign of denervation was detected.

This first approach, although limited to the EMG manifestations, was clear enough to justify a deeper investigation in these patients by employing other techniques with the purpose of obtaining more information about the involvement of the motor unit in this pathological condition (see Sanz *et al.*⁷ and Taratuto *et al.*¹⁰).

SUMMARY

An electromyographical investigation of 80 patients with chronic Chagas' disease was made. It was found that 79% of the studied patients had EMG manifestations of old and chronic denervation of the upper and lower limbs without clinical features of nervous system involvement.

RESUMEN

Hallazgos electromiográficos en la enfermedad de Chagas crónica humana.

Fueron estudiados 80 pacientes portadores de la forma crónica de la enfermedad de Chagas mediante el empleo de técnicas convencionales de electromiografía de detección. Los hallazgos evidenciaron en el 79% de los pacientes signos de denervación antigua tanto en miembros superiores como inferiores, aunque con predominio en estos últimos. En ningún caso hubo manifestaciones clínicas concomitantes.

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