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EXAMINING THE ETIOLOGY OF PATIENTS DIAGNOSED WITH POLYNEUROPATHY ACCORDING TO SUBTYPES

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ABSTRACT

Aims: In this study, the aim is to classify the patients who were diagnosed with polyneuropathy in Trakya University Health Services Research and Application Center Neurology Polyclinics EMG Lab between years 2014 and 2015, relevant to their subtypes (axonal, sensorial and sensorimotor), and to investigate the causes and their relation to each subtype.

Methods: The reports of 144 patients diagnosed with polyneuropathy in between 2014 and 2015 were scanned retrospectively. The patients were represented with age, gender, polyneuropathy type and etiologic inference. The correlation between the diagnosis of polyneuropathy and its underlying etiology was analyzed with the SPSS software and presented statistically. Patients were categorized in accordance to their polyneuropathy types by chi-square test. As descriptive statistics, numbers and percentages, arithmetic mean ± standard deviation and median (minimum-maximum) values were provided.

Results: It is seen that the patients whose application is related to diabetes, cancer, chemotherapy, dysproteinemia, AIDS, B12 vitamin insufficiency and pyridoxine intoxication have a higher rate of polyneuropathy. Meanwhile, no significant difference among the causes of the three polyneuropathy types was found.

Conclusion: Thorough and attentive investigation on the etiology of patients who were diagnosed with polyneuropathy can lead to pre-diagnosis.

Keywords: Polyneuropathies, etiology, diagnosis

INTRODUCTION

Polyneuropathy is a clinical picture which manifests with the diffuse involvement of the peripheral nerves which are related to same cause and physiopathology. The diseases which constitute polyneuropathies may in the foreground affect the cell body (neuronopathy), may primarily cause axonal damage (axonopathy) and they may primarly damage the myelin sheath (myelinopathy) (1). Acute and chronic inflammatory demyelinising polyneuropathies, some forms of hereditary motor and sensory neuropathies and diphtheria-related polyneuropathies line up among the major polyneuropathies which primarily damage the myelin sheath. There is a wide range of polyneuropathies which cause primary axonal damage. Toxic, metabolic or nutritional deficiency-related polyneuropathies are usually listed in this group (2). To determine a curable polyneuropathy, one must analyze the clinical and laboratory data. Most common diagnosis groups are hereditary and imflammatory demyelinising polyneuropathies as well as polyneuropathies which manifest in relation to other diseases such as diabetes, metabolic diseases, nutritional inefficiency, toxins, cancer and Guillain Barre (3). We planned to present the diagnosis of patients consulting our electroneurophysiology laboratory and to examine the consistence between the EMG results and underlying causes.

MATERIAL AND METHODS

In this study, the EMG reports of all the patients who were diagnosed with polyneuropathy in Trakya University Health Services Research and Application Center Neurology Polyclinics EMG Laboratory between 2014 and 2015 were scanned retrospectively. By checking the

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registry book of 2014-2015, 144 patients with a diagnosis of polyneuropathy were identified and their EMG reports were accessed in the archive room of the polyclinic. The reports were obtained from the Medelec Synergy brand EMG device and they include date, patients name, age, gender, EMG findings and conclusion. To preserve the privacy of the volunteers, the patient's names were not registered in any stage of the research. Patients were represented with age, gender and underlying etiology.

After reviewing EMG results, the subtypes were researched. According to EMG results, patients were divided in three sub-groups: sensorial-axonal, sensorimotor-axonal and sensorimotor-demyelinising.

Chi-square analysis in the SPSS software was used to review the patients in accordance to their polyneuropathy subtypes and to study the relationship between subtypes and underlying etiology. As descriptive statistics, numerals and percentages, arithmetic mean ± std deviation, median (minimum-maximum) values were provided, as well as two-way statistical analysis (α=0,05).

RESULTS

Out of 144 patients, 84 (58.3%) were male and 60 (41.7%) were female. The mean age was 62.3 ± 14.4 and the youngest patient was 6 years old, while the oldest one was 87. 88 (61.1%) cases were sensorial-axonal, 36 (25%) were sensorimotor-axonal, 20 (13.9) were demyelinising. As for etiology, 59 (41%) cases were metabolic-related, 45 (31.2%) were medication-related, 21 (14.6%) were autoimmune-related, 19 (13.2%) were neoplasia-related.

All of the patients were diagnosed with polyneuropathy, but after etiologic examination 38 (26.4%) patients had diabetes mellitus, while 45 (31.2%) were receiving chemotherapy. As for polyneuropathy subtypes, out of the patients with diabetes mellitus 18 (47.4%) fell in sensorial-axonal group, and 34 (38.6%) of the chemotherapy-receiving patients were in sensorial-axonal. After analyzing, no significant difference of etiologies between different subtypes was found (p=0.0217).

DISCUSSION

In our research, we revealed that out of 144 patients who were diagnosed with polyneuropathy in Trakya University Health Services Research and Application Center Neurology Polyclinic EMG Laboratory between 2014 and 2015, only 59 (41%) had metabolic-related etiologies.

Data acquired from the research carried out Sönmezler et al. (4), which was held with 921 PNP pre-diagnosed patients supports our study. The most common cases were polyneuropathies secondary to systemic diseases. In 39.2% of patients the pre-diagnosis matched the diagnosis from EMG.

Electroneuromyography is a workup to review the status of anterior horn cell, peripheral nervous system, neuromuscular junction and the neurophysiologic characteristic of the muscle. Nowadays, electroneuromyography is important for diagnosing, determining the prognosis, deciding the treatment and following-up the ongoing treatment. While the nerve damage could be caused by internal diseases involving the nerve, it can also be caused by diseases which only affect nerves, without any other source. Neurologic diseases of the nerves which manifest by dysfunction of immune system can also lead to polyneuropathy. Guillain-Barre syndrome, chronic inflammatory demyelinising polyneuropathy (CIDP), multifocal acquired demyelinising sensory and motor neuropathy (MADSAM) and distal acquired demyelinising symmetric neuropathy (DADS) fell in this group (5). Diabetes is the most common internal disease which causes polyneuropathy. Loss of neurons take place due to capillary embolism in diabetes. Accordingly, 59 (41%) of the patients in this research have metabolic-related etiology. This high prevalence make it difficult to benefit from sensorial symptoms and findings.

This circumtance sets forth that patients led to EMG must undergone more thorough and adequate clinical examinations.

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Ethics Committee Approval: This study was approved by

Trakya University Faculty of Medicine Scientific Researches Ethics Committee.

Informed Consent: Written informed consent was obtained from the participants of this study.

Conflict of Interest: The authors declared no conflict of interest.

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