

Quality of referrals for Nerve conduction studies and Electromyography to a tertiary care rehabilitation center

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Objectives: To perform an audit of quality of referrals for Electrodiagnosis (EDX)/Nerve conduction studies and Electromyography (NCS/EMG) to a tertiary care rehabilitation center.

Methodology: A detailed referral proforma covering all the prerequisites for EDX studies had already been distributed to dependent Defense Forces Hospitals. The data were taken from those proformas and the patients were asked if the referring physician had explained them about the test and if they had gone through the instructions. The reporting time of the patient, if they were late than the appointment time was calculated in minutes. Physician's explanation about the procedure to the patient and provision of information about precautions and contraindications was also included.

Results: Of the total 130 registered patients, 85 were males and 45 females. 86 (66.2%) referrals were made by consultants, 42 (32.3%) by residents and 2 (1.5%) by general practitioners. 41 out of total were from consultants and residents in Physical Medicine and Rehabilitation, followed

by 22 from orthopedics. Largest number of referrals were from Combined Military Hospital Rawalpindi (43) and Armed Forces Institute of Rehabilitation Medicine (40). The clinicians neither provided clinical notes (62%) nor mentioned the query and provisional diagnosis (53%). Majority (92%) did not provide information about the test to the patient and did not instruct the patient about any precaution to be taken (92%). The patients on the other hand generally read the instructions provided in the request pro forma (54%) and reported well in time for the appointment of procedure (86%).

Conclusion: An inappropriate practice in referring patients uncritically for EDX studies was common. Adopting good referral practices seemed crucial for meaningful usefulness of NCS/EMG. Instructions for proper referrals were sent to the concerned hospitals and a repeat audit was planned after one year. (Rawal Med J 2013;38: 113-116).

Key words: Nerve conduction studies, electromyography, Quality of referral.

INTRODUCTION

Nerve conduction studies and Electromyography (NCS/EMG) play a key role in evaluation of the patients with diseases that damage muscle tissue, peripheral nerves or the neuromuscular junctions.¹ If performed and interpreted correctly they can yield critical information regarding underlying neuromuscular disorders even if imaging studies are questionable, and often lead to medical and surgical intervention.^{2,3} However, NCS and EMG results alone are not pathognomonic of a specific disease or able to give a definitive diagnosis.^{4,5} In clinical practice, these studies always serve as an extension of an appropriately directed neurological examination.⁶ Moreover, the procedure is half invasive, and so the referring physician must apprise the patient about the utility and nature of the test.⁷

There are few prerequisites to make a request for an electrodiagnostic (EDX) assessment. It demands important facts to be mentioned in clinical history, examination and reason for referral or provisional diagnosis. The physician must assess any contraindication (bleeding tendency, implanted cardioverter defibrillator device etc) and acknowledge the patient about the nature of the test.^{8,9} The referring physician is also need to state seropositivity of patients for Hepatitis B (HBV), Hepatitis C (HCV) and Human immunodeficiency virus (HIV) because of risk of occupational exposure, via sharp injuries, to these blood-borne pathogens.¹⁰⁻¹³ The physicians, however, in our setup, refer the patient for these studies without providing necessary clinical information making it difficult and time consuming for the

electromyographer to make an electrophysiological impression. The lack of information on part of the patients makes it hard for them to tolerate the test both physically and mentally. The aim of this study was to provide the analysis of prevailing situation on the topic, identify the weaknesses in the clinical system and suggest measures to improve to enhance the quality of care for the patients.

METHODOLOGY

This cross-sectional descriptive study was carried out at the Department of Electrodiagnostic Studies, Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi, Pakistan, which is a tertiary care rehabilitation center. All patients referred to AFIRM for NCS/EMG were included in the study. Patients who did not have a referral from a physician and those suffering from a psychiatric disease were excluded from the study.

A detailed referral proforma covering all the prerequisites for EDX studies had already been distributed among the dependent Defense Forces hospitals. The data were taken from that proformas and a few verbal questions were asked from the patients. They were asked if the referring physician had explained to them about the test and if they had gone through the instructions. The reporting time of the patient, if they were late than the appoint time was calculated in minutes. The study information was kept confidential.

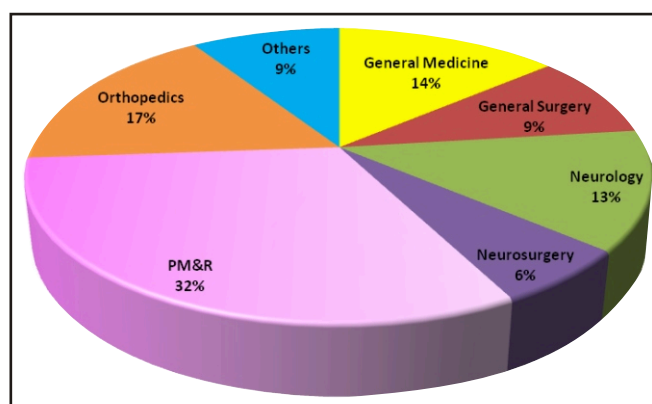
The data were analysis using IBM SPSS V. 20. Mean and SD were calculated for "age" and "time in minutes" for those coming late for the appointment time. Frequencies and percentages were calculated for clinical notes provided, clinical question asked, reading of instructions by the patients and reporting time of the patients.

RESULTS

Out of 130 patients, 85 (65.4%) were males and 45

(34.6%) females. The mean age for males was 43 ± 16 years and mean age for females was 44 ± 19 years. 86 (66.2%) referrals were made by consultants, 42 (32.3%) by residents and 2 (1.5%) by general practitioners. 41 (31.5%) referrals were from consultants and residents in Physical Medicine and rehabilitation (PMR) (Fig 1). Combined Military Hospital (CMH) Rawalpindi had the bulk of referrals ($n=43$;33.1%) followed by AFIRM ($n=40$;30.8%), Military Hospital (MH) Rawalpindi ($n=25$;19.2%) and Pakistan Navy Ship (PNS) Hafeez Islamabad ($n=5$;3.8%). In 81 (62.3%) cases, the clinicians did not provide clinical notes while in 49 (37.7%), they did. In 61(46.9%), the query was mentioned yet in 69 (53.1%) it was not. 63 (48.5%) cases had provisional diagnosis mentioned on the proforma while 67 (51.5%) did not have a provisional diagnosis.

Fig 1: Specialties referring to AFIRM Electrodiagnostic clinic.



The most suitable referrals in terms of clinical information to the electromyographer were from general surgery followed by PMR (75% & 73.2% respectively) and the most inadequate referrals were from orthopedics & neurosurgery (54% & 50% respectively) (Table 1).

Table 1. The specialties providing Clinical Notes.

Clinical Notes Provided	General Medicine	General Surgery	Neurology	Neurosurgery	PM&R	Orthopedics	Others
Yes	61.1%	75.0%	52.9%	50.0%	73.2%	45.5%	66.7%
No	38.9%	25.0%	47.1%	50.0%	26.8%	54.5%	33.3%

119 (91.5%) patients were not provided information about the test or contraindication or precaution by the physician. 70 (53.8%) patients read the instructions in Urdu provided in the request proforma while 60 (46.2%) did not. 111 (85.4%) patients reported on time for the appointment, 11 (8.5%) were late by a mean time of 45 ± 18 minutes. In 8 (6.1%) cases the test was done without giving an appointment.

DISCUSSION

NCS/EMG studies always necessitate a clear-cut direction and questioning of the referring physician, as multiple pathologies may be present at a time in a patient and counting all of them may waste the precious time of the electromyographer and prolong distress of the patient because NCS/EMG even when performed at best are uncomfortable and painful.^{14,15} This is a moral obligation on part of the requesting clinician to give a foresight of the test to the patient to save time and gain patient's trust.^{16,17} Problems arise when neurophysiological abnormalities are subtle, the patient is uncooperative or the technical factors have not been taken care of. The studies are also highly operator dependant.¹⁸

This audit helped us to understand the use of EDX services by physicians belonging to different specialties. Male subjects constituted 65.4% of the sample size. The appreciable show from PM&R Specialists is obviously because they are the ones who actually perform the test and know the utility, sensitivity, specificity and prerequisites of EDX studies. However, the best input from the department of general surgery probably points to a good medical practice. The general inefficiency in providing necessary information to the patient about the test beforehand (only 8% provided information) speaks of deficiency in patient education and overburden on physicians. The interest of patients about their test was possibly related to their concern about the test and possibly, that the instructions were in the national language.

Most research done internationally is focused on specificity of EDX tests and their comparison with imaging studies and surgery and there is less research into the effectiveness of diagnostic

strategies or assessing the referrals, something most clinicians develop through clinical practice. Nevertheless, studies now are beginning to appear.^{19,20} A study from Slovenia reported general practitioners referred 64.7% patients.²¹ However, a study from Italy involving 3,900 subjects found that the request for an EDX test came from the GPs in 25% whilst 75% came from specialists.²² On the contrary, another Italian study reported that the referring doctors had indicated the suspected diagnosis in the request in 76.6% of cases.²³ These studies compared with ours indicate that the referring physicians are increasingly requesting EDX studies without a precise diagnostic suspicion. This may not be justifiable and practical use of time.²⁴

Our study had few limitations. We did not quantify the average time taken on an electrodiagnostic test and the average number of needle pricks a patient received. We did not follow a scoring scale in assessing performance of different specialties, because, to our knowledge, there was no such existing scale.

This study was the first on this subject carried out in Pakistan at a tertiary care EDX center. It has identified two correctable problems that need to be addressed i.e., the lack of appropriateness of a large proportion of the requests and the frequent lack of information given to the patient. If these problems are rectified, the examination will be easier and less invasive as it will be limited to verification of a precise diagnostic hypothesis that has already been formulated.^{25,26} Based on these results, greater sensitization and information dedicated both to GPs and specialists about the usefulness and limits of EDX tests could be useful. Therefore, through our official channel we requested the physicians in dependent Defense Forces Hospitals to follow the request proforma already distributed in true spirit and planned to do a re-check audit after one year.

CONCLUSION

We found an inappropriate practice in referring patients uncritically to the EDX studies. Adopting good referral practices seemed crucial for meaningful usefulness of NCS/EMG.

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