Adequacy of Magnetic Resonance Image versus Electromyography in Patients with Back Pain

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Abstract

This study included patients with back pain. The electromyography (EMG) test were done in the neurophysiology unit in Mirgan hospital in Babylon city and the magnetic resonance image (MRI) test done in the radiologist unit in Hilla surgical teaching hospital. The important results in this study the distribution of patients with back pain according to EMG 96% of patients diagnosed as lumber radiculopathy while according MRI 98% of patients diagnosed as lumber Radiculopathy. The distribution of patients with lumber radiculopathy according to MRI results including (severity and root affected) the (MRI) more accuracy than (EMG) in diagnosis of back pain and the most lumber radiculo pathy effected in EMG are L4 and L5 while the most lumber radiculopathy effected in MRI areL4 ,L5 and S1.

Key words: MRI : (magnetic resonance image), EMG : (electromyography).

Introduction

Back pain shows a major problem in the society and a common reason for consulting a physician, a rheumatologist, an orthopedic, a physiotherapist, etc. The most common cause of back pain respectively is degenerative spin prolapse occurring as a result of age related [1].

Back pain is pain felt in the back. Back pain may be acute, sub-acute, or chronic depending on the duration of low back pain. The pain may be characterized as a dull ache, shooting or piercing pain, or a burning sensation. The pain may radiate into the arms and hands as well as the legs or feet, and may include paresthesia, tingling with no apparent cause [2].

Back pain is pain felt in the back. Episodes of back pain may be acute, sub-cut, or chronic depending on the duration of low back pain. The pain may be characterized as adult ache, shooting or piercing pain, well as the legs or feet, and may include paresthesia, tingling with no apparent cause [2].weakness or numbness in the legs and arms. The anatomic classification of back pain follows the segments of the spine, neck pain(cervical),middle back (thoracic), lower back pain (lumber)with the lumber vertebrae area most common for pain. Back pain is common with about nine out of ten adults experiencing it at some point in their life, and five out of ten working adults having it every year [3] It is rare it to be permanently disabling and in most cases of herniated disk and stenosis, rest, injections or surgery have similar general pain resolution outcomes on average after one year. In United States acute low back pain is the fifth most common reason for physician visits and causes 40% of missed days off work. Additionally, it is the leading cause of disability worldwide [2].

Low back pain that lasts at least one day and limits activity is a common complaint. Globally about 40% of people have LBP at some point their lives [4] Approximately 9 to 12% of people (632million) have LBP at any given point in time and nearly one quarter (23.2%) report having it at some point over any one-month period [5].

Difficulty most often begins between 20 and 40 years of age[6] Low back pain is more common among people aged 40-80 years with overall number of individuals affected expected to increase as the population ades (4). It is no clear whether men or women have higher rates of low back pain [7].
In 2012 review reported a rate of 9.6% among males and 8.7% among females (Nikias, and Petropulu, 1993). Another 2012 review found a higher rate in females than males, which the review felt was possibly due to greater rates of pains due to osteoporosis, menstruation and pregnancy among women, or possibly because women were more willing to report pain men [8]

Material and Methods

The subject was included in this study, patient with back pain and control group. The electromyography test were done at the neurophysiology unit of Mirjan Teaching hospital in Babylon City, during the period October 2016 to February 2017. and the magnetic resonance image test done at the Radiologist unit in Hilla surgical teaching hospital. The subject were free from any neurological problems, also the were free from other disease that may affect the nerve function, such as diabetes mellitus, renal failure, hepatic failure, patients with pace maker. There social status ranged between hospital working staff and relatives the age distribution of study groups ranged from 40-55 years. The number of patients in this studies 100 persons (48male&52female)

Instruments Used in This Study

Electromyography

EMG is an electrical recording of muscle activity that aids in the diagnosis of neuromuscular disease [9] using an instrument called an electromyography, to produce a record called an electromyogram. An electromyography detect the electrical potential generated by muscle cells [10].

Magnetic Resonance Imaging

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<th>Socio-demographic variables, Back pain patients</th>
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Result

In this study most of patients were between age 40 and 55 years and most of them were female as show in Table (1). The distribution of patients with back pain according to EMG and MRI results as shown in Figure(1). According to EMG (96%) of patients diagnosed as lumber radiculopathy, while according to MRI (98%) of patients diagnosed as lumber radiculopathy. The distribution of patients with lumber radiculopathy according to MRI results including (severity and root affected), as shown in Figure(2).which showed the (MRI) more accuracy than (EMG) in diagnosis of back pain and figure 3 showed the most lumber radiculopathy effected in EMG are L4 and L5 while the most lumber radiculopathy effected in MRI are L4, L5 and S1.

Data Analysis

Statistical analysis was carried out by SPSS version 17. Categorical variables were presented as frequencies and percentages. Continuous variables were presented as (Means ± SD). Student t-test was used to compare means between two groups when study variable was normally distributed. Mann-Whitney test was used to compare means between two groups when study variable was none normally distributed. A p-value of ≤ 0.05 was considered as significant [4].

Table 1: Distribution of patients according to socio-demographic variables

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Discussion

The result showed that MRI scanning has high accuracy in the diagnosis. These results agreed with a study conducted by [4]. The symptoms and clinical findings associated with neuropathy and radiculopathy is helpful in the diagnosis of both conditions. An interesting finding of this research was the EMG abnormalities. Our study showed a high frequency of radiculopathy particularly Multiradiculopathy. [11]

The L4 and L5 and S1 roots injuries and the prevalence of L5 and S1 radiculopathies were almost the same. We also found a high prevalence of L4 radiculopathy. It has been described. These result agreed with [5] it has been described, when considering MRI abnormalities, that L4-5 is the commonest involved level in LSD, followed by L5-S1 and L3-4. radiculopathy been described, when considering MRI abnormalities, that L4-5-S1 is the commonest involved level in LSD, followed by L5-S1 and L3-4. Maybe it could reflect that MRI is not a sensitive method to assess [12].

Conclusion

• Back pain was an aging disease, has different signs and symptoms.

• Females are more prevalent than males in developing back pain and these increases with the age.

• Give more accurate information in diagnosing root lesion in both, MRI and EMG, should be done.

References


