INTRODUCTION

Obesity is the major problem in worldwide which is associated with a different complication like cardiovascular disease, diabetes mellitus, hypertension atherosclerosis, now a day’s obesity is correlated with musculoskeletal problems. Overweight and obesity are correlated to accelerated the risk of lower back pain. Many patients’ complaints regarding the low back pain (LBP). Sciatic neuropathy is one of the lower extremities most common peripheral neuropathy. One of the most common sciatic neuropathy presentations is drop in the foot. Because weakness of the ankle dorsiflexion, with or without sensory impairment of the lower extremity, can also be associated with several other clinical syndromes, careful evaluation is necessary before confirming a diagnosis of sciatic neuropathy. Electrodiagnostic testing is one important device for confirmation of suspect sciatic neuropathy and in assessing the potential for nerve function recovery.

Few studies specifically examine sciatica, but some low back pain studies include data on sciatica prevalence, risk factors, and natural history. Low back-related leg pain, or sciatica, is one of the most common variations of low back pain. Sciatica is known in the literature through a variety of terms such as lumbosacral radicular syndrome, radiculopathy, nerve root pain, and nerve root irritation. There is controversy over the use of sciatica as a term in clinical and research contexts. Sciatic pain is generally defined as pain radiating to the leg, normally below the knee and into the foot and toes. As with low back pain, sciatica is a symptom rather than a specific diagnosis, but lumbar disk herniation and lumbar canal or foraminal stenosis are typical pathologies that may cause sciatic pain.

Sciatic patients usually have major pain which is lower back pain radiating to leg. These patients having more disability and they are irregular for the work due to the pain.
LBP was longer duration is considered as a mainly neurological cause. However, in the past decade, many authors reported that socioeconomic and work-related factors which were not previously investigated may contribute to LBP. Few studies of sciatic pain exist. Therefore, assessing overweight and obesity leads to Nerve conduction studies in the patients of sciatic involvements. We undertake the present study, to find out any relation in between overweight and obese subjects suffering from sciatica pain.

**MATERIALS AND METHODS**

This study was conducted at MGM college and hospital Aurangabad. The patients having LBP with overweight and obese are categories initially and send for the neurophysiology lab in the hospital for Nerve conduction study. These selected patients’ routine clinical examination was carried out and noted all anthropometric parameters. The patient having mild, moderate, severe pain which is radiating to legs were included in our study.

**Anthropometric measurements:** The height and weight were measured after the recruitment of the subjects in the study. In standing, position height was measured and weight is in kg. According to the weight and height BMI was calculated as weight/height² (kg/m²). Other variables like waist, hip circumferences were measured and hip waist ratio was calculated.

**Cardiovascular parameter:** The pulse rate was recorded by manually, the pulse was examined with three fingers of the right hand over the subject of the radial artery with three fingers, in semi flexed wrist with the distal figure for obliterating the retrograde pulsation. Pulse rate was the count for one minute. In the supine position, the blood pressure was noted with a sphygmomanometer (Diamond) on the arm at the heart level.

**Study Design:** Case-Control

**Sample Size:** 100

**Period of Study:** Two year

**Study Population:** OPD/IPD overweight Patients Lower Back Pain (LBP) willing for investigation.

**Study Area:** Mahatma Gandhi Medical College, Aurangabad

Inclusion criteria:
- Reproductive age group >20 to 60 years
- Patients having Sciatica
- LBP (low back pain)

**Exclusion criteria**
- Surgical intervention.
- Fracture in pelvic

**Electrophysiological methods**

Nerve conduction study was done on RMS EMG EP Mark-II. For Motor nerve study, duration was kept at 200 μs, the filter was between 2 Hz to 10 kHz and sweep speed was 5 ms/D for lower limb and at 100 μs, 2 Hz-5 kHz, 5 ms/D. Parameters studied for motor nerves were distal motor latency (DML), amplitude and conduction velocity (CV).

**Straight Leg Rising Test (SLRT):** This is the most important diagnostic sign in the patients of Sciatica. The SLRT was carried out with the patient at the supine position. The leg affected with sciatica was raised passively, with the patient relaxed and the knee in full extension. When the patient started to feel discomfort, the elevation of the leg was stopped, and the elevation angle and amount of pelvic movement were registered. The patient was then asked to indicate how the pain and paraesthesia were distributed. The foot was dorsiflexed with the leg in the raised position, and the neck was flexed and the effect of this was also documented. Another side straight-leg raising was carried out. In this study, we categorized the SLR in the following Grade

<table>
<thead>
<tr>
<th>SLR Grade</th>
<th>Degree of Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0</td>
</tr>
<tr>
<td>Mild</td>
<td>75-65</td>
</tr>
<tr>
<td>Moderate</td>
<td>65-55</td>
</tr>
<tr>
<td>Sever</td>
<td>55-45</td>
</tr>
<tr>
<td>Sever</td>
<td>45-35</td>
</tr>
</tbody>
</table>

**RESULTS**

The present work was carried out in the Physiology department at Mahatma Gandhi Medical College to analyze the role of overweight and obesity may affect sciatica.

**Demographic characteristics of Subject**

The total number of subjects recruited in this study was 104 among these three Patients’ dropout due to absenteeism and One is not willing for performing the Nerve Conduction Study. Total 100 patients were selected for this study, out of that 68% population of patients (68) were female and 32% population (32) were male in graph. In Table 1 straight leg raising test and its grades were categorized based on the degree of angle. The number of patients was distributed in it.

Table 2 shows anthropometric values, the mean value of anthropometric parameters weight, height and BMI was 75.86 ± 8.80, 156.96 ± 9.76 and 30.96 ±4.04 respectively. Table 3
shows the mean values of Demographic parameters such as pulse, systolic and diastolic blood pressure and Chest, Waist, Hip Circumference and their ratio. The mean value of Motor nerve conduction Velocity in the normal subject was 51.79 ± 3.46 and the motor nerve conduction velocity of the sciatic patient was 48.02 ± 5.17 on the affected shows in decreased value in table 4, which was statistically significant.

**DISCUSSION**

Electrodiagnostic tool used to test the functioning of nerves, particularly the ability of transmission of the electrical stimulus. NCV studies can understand the degree of demyelination and axonal loss in examined nerve segments. Demyelination of a nerve results in prolonged conductive duration (decreased conductive velocity), while axonal impairment typically results in impairment of nerve fibres and potential strength of the muscle. The assessment of the electrodiagnostic study of nerve conduction is measured by four criteria, i.e., latency, Amplitude, Duration and velocity of the evoked potential. Out of which Motor nerve conduction Velocity is the important parameter for the involvement of nerve. Table 1 shows the gender-wise distribution of Patients involved in the Sciatica.

Table 2 shows the Straight Leg Rising Test with Grade and number of Patient involved in Nerve conduction study as per their severity. In another study by Michael et al (1974) observed the form of pain induced by passive SLR fell into three precise groups. Table No 2 shows Anthropometric Parameters like weight, height and BMI of sciatic subjects. There is a likely causal relationship between body height and sciatic risk, but height isn’t necessarily predictive of other types of low back pain. Obesity, smoking, psychological distress and poor general health also carry an increased risk of low back pain but is questionable about their possible association. Although none of the suspected risk factors can be identified as being scientifically well investigated.

This study is aimed at deriving obesity lead to Nerve conduction velocity in a specific regional population that closely correlates to the demographic outline of the patients of sciatica being considered. In this study, obesity leads to Sciatic nerve conduction involvement found in conduction velocity significantly decreases. NCV tests may recognize the level of demyelination and neuronal loss in examined nerve parts. Demyelination of a nerve leads to increased delivery times. A similar finding was observed in “obese may also interfere with the nutrition of the intervertebral discs, leading to an impaired healing process. In a 3-year follow-up study of sciatica patients, BMI was the strongest interpreter of incident lumbar artery occlusion, which also suggests that impairment of nutrition can be one of the pathways of obesity’s relationship with sciatica.

Obesity supports establish chronic, low-grade inflammation by releasing inflammatory mediators from excess adipose tissue. Chronic inflammation associated with obesity may lead to the development of sciatica or to the develop the symptoms of sciatic. Leptin is one of the major constituents of adipocyte-derived adipokines which raised the serum leptin which is correlated to obesity and leads to BMI-independent knee arthritis. Leptin is estimated of involving the reorganization of nucleus pulposus cells cytoskeletons, but the fat tissue-derived leptin in the association between sciatica and obesity. Leptine is the key substance for controlling homeostasis of body weight and energy balance. The gene, coding protein which consists of 165 amino acid is called Leptine which produce adipocytes. The obese people often show hyperleptinemia this may cause by the post-receptor disorder. It is supposed to absolute and relative leptine deficiency in obese people.

**CONCLUSION**

An electrodiagnostic test is an important tool used to test the functioning of nerves, speciallyly check the of conduction of electrical stimulus. NCV studies can early recognize demyelination and neuronal loss. Due to demyelination prolong conductive velocity observed. We concluded that, early detection of demyelination and neuronal loss helpful for avoiding sciatic pain in an obese person. This also shows comparative data of the patient having sciatic pain with the normal subject.

**ACKNOWLEDGMENT**

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**Conflict of Interest:** There is no conflict in this article.

**REFERENCES**


Figure 1: Gender wise distribution of research participants.

Table 1: Straight Leg Rising Test with Grade and number of Patient involved in sciatica.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>SLR GRADE</th>
<th>No. of sciatica Patients (50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mild</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Moderate</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>Sever Grade-1</td>
<td>25</td>
</tr>
<tr>
<td>4.</td>
<td>Sever Grade-2</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 2: Anthropometric Parameters.

<table>
<thead>
<tr>
<th>Weight</th>
<th>Height</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>75.86 + 8.80</td>
<td>156.96 + 9.76</td>
<td>30.96 + 4.04</td>
</tr>
</tbody>
</table>
Table 3: Cardiovascular Parameters

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean + SD</td>
<td>Mean + SD</td>
<td>Mean + SD</td>
<td>Mean + SD</td>
<td>Mean + SD</td>
<td>Mean + SD</td>
</tr>
<tr>
<td>83.88 + 4.79</td>
<td>121.4 + 6.66</td>
<td>80.16 + 6.68</td>
<td>35.38 + 3.90</td>
<td>39.28 + 3.73</td>
<td>38.32 + 3.67</td>
</tr>
</tbody>
</table>

Table 4: Nerve conduction velocity (m/s) of in the obese subject suffering from sciatica pain with normal subjects.

<table>
<thead>
<tr>
<th>Paired Samples Statistics</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>NCV in normal subject</td>
<td>51.7940</td>
<td>50</td>
<td>3.50489</td>
</tr>
<tr>
<td>NCV in Obese subject</td>
<td>48.0200</td>
<td>50</td>
<td>5.23134</td>
<td>0.73982</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paired Samples Correlations</th>
<th>N</th>
<th>Correlation</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>NCV in normal subject &amp; NCV in Obese subject</td>
<td>100</td>
<td>-.007</td>
</tr>
</tbody>
</table>
Paired Samples Test

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1 NCV in normal subject - NCV in Obese subject</td>
<td>3.77400</td>
<td>6.31761</td>
<td>.89344</td>
<td>1.97856 - 5.56944</td>
<td>4.224</td>
<td>49</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

Values < 0.05 is statistically significant * Highly significant 0.001

**Figure 5:** Comparison of Nerve conduction velocity of obese subject having sciatic pain as compared to normal subjects.