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Research Article

**OBSTRUCTIVE SLEEP APNEA IN PATIENTS WITH
METABOLIC SYNDROME**¹Dr. Shahid Hussain Memon, ²Dr. Shafi Muhammad Khuhawar, ³Dr. Musarat Jehan Baloch, ^{3*}Dr. Samar Raza, ³Dr. Asim Munir Memon ¹Dr. Nimerta, ³Dr. Abeera Qureshi¹Liaquat University of Medical and Health Sciences (LUMHS) Jamshoro²Ghulam Muhammad Mahar Medical College (GMMMC) / Hospital Sukkur and Shaheed³Liaquat University Hospital Hyderabad / Jamshoro⁴Zulekha Hospital Dubai United Arab Emirates

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Abstract:**Objective:** To determine the obstructive sleep apnea in patients with metabolic syndrome.**Patients And Methods:** The two year hospital based cross-sectional multidisciplinary and multicenter study (2016-2018) was conducted at tertiary care hospitals and the data was also gained from few private hospitals. All the patients known cases of metabolic syndrome were recruited and explored. Physical examination was performed to look for upper airway anatomy. Patients with symptoms suggestive of OSA and ESS score of more than 10 underwent a limited polysomnography with three channels which included nasal airflow measurement, chest movement and pulse oximetry whereas the frequency / percentages (%) and means \pm SD computed for study variables.**Results:** During two year study period total fifty patients were explored and study. The mean \pm SD for age (yrs) of population was 54.22 ± 4.41 . The OSA was observed in 32 (64%) and its severity identified as mild 08 (25.0%), moderate 15 (46.8%) and severe 09 (28.1%).**CONCLUSION:** Incidence of OSA was significantly higher in metabolic syndrome patients and early detection and treatment of OSA in MS patients can prevent development of complications.**Keywords:** Sleep apnea, metabolic syndrome and obesity**Corresponding author:*****Dr. Samar Raza,**

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INTRODUCTION:

Metabolic syndrome has become one of the major public health challenges worldwide. It was first described as a cluster of metabolic abnormalities, with insulin resistance as the central pathophysiological feature, and was labeled as Syndrome X. It has been defined as a constellation of inter-related risk factors of metabolic origin, including hypertension, insulin resistance, dyslipidemia and obesity / visceral obesity. The cause of the syndrome remains unknown. Insulin resistance and central obesity have been acknowledged as key driving forces for the metabolic syndrome, and they are, independently, also well known cardiovascular risk factors [1]. The prevalence of metabolic syndrome is increasing due to the obesity epidemic. It is associated with a three-fold and two-fold increase in type II diabetes mellitus and cardiovascular diseases respectively. It is also associated with cardiovascular mortality as it comprises established risk factors for cardio-metabolic diseases. Whether the syndrome is an independent risk factor to cardiovascular disease is subject to debate. Data show a strong association between OSA and the metabolic syndrome, which is indicative of adverse cardiovascular outcomes [2]. Obstructive sleep apnea (OSA), also known as Obstructive sleep apnea/ hypopnea syndrome(OSAHS) is a sleep disorder characterized by recurrent upper airway collapse and obstruction during sleep associated with recurrent oxygen desaturation and arousals from sleep [3]. OSA leads to symptoms such as snoring, witnessed apneas, excessive daytime sleepiness and road traffic accidents due to sleepiness. It is also associated with an increased risk of cardiovascular disease, hypertension, insulin resistance and cerebrovascular disease. OSA is a fairly common condition, but often goes unrecognized. Thus the aim is to determine the

prevalence of Obstructive sleep apnoea in patients diagnosed with metabolic syndrome.

PATIENTS AND METHODS:

The two year hospital based cross-sectional multidisciplinary and multicenter study (2016-2018) was conducted at tertiary care hospitals and the data was also gained from few private hospitals. All the patients known cases of metabolic syndrome were recruited and explored while the exclusion criteria were patients with hypothyroidism, critically ill patients, patients with end stage organ disease and malignancy and pregnant women. After taking clinical history, physical examination and routine investigations, the patients fulfilling the International Diabetic Federation (IDF) criteria for metabolic syndrome were screened for symptoms of OSA (snoring, witnessed apneas and excessive day time sleepiness). Epworth sleepiness scale was used to screen for Excessive Daytime Sleepiness (EDS). Physical examination was performed to look for upper airway anatomy. Patients with symptoms suggestive of OSA and ESS score of more than 10 underwent a limited polysomnography with three channels which included nasal airflow measurement, chest movement and pulse oximetry. The limited PSG data was analysed and a diagnosis of OSA was made if the Apnea-Hypopnea index was >5 per hour. The data was collected on pre-designed proforma and analyzed in SPSS to manipulate the frequencies and percentages.

RESULTS:

During two year study period total fifty patients were explored and study. The mean \pm SD for age (yrs) of population was 54.22 ± 4.41 . The demographical and clinical profile of study population is presented in Table 1.

TABLE 1: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF STUDY POPULATION

| Parameter | Frequency (N=50) | Percentage (%) |
|------------------------------|------------------|----------------|
| AGE (yrs) | | |
| 30-39 | 05 | 10 |
| 40-49 | 15 | 30 |
| 50-59 | 12 | 24 |
| 60-70 | 09 | 18 |
| 70+ | 09 | 18 |
| GENDER | | |
| Male | 30 | 60 |
| Female | 20 | 40 |
| RESIDENCE | | |
| Urban | 22 | 44 |
| Rural | 28 | 56 |
| CO-MORBIDITIES | | |
| Diabetes mellitus | 15 | 30 |
| Hypertension | 14 | 28 |
| Dyslipidemia | 10 | 20 |
| Ischemic heart disease | 11 | 22 |
| SYMPTOMS | | |
| Snoring | 27 | 54 |
| Excessive daytime sleepiness | 13 | 26 |
| Witnessed apneas | 10 | 20 |
| OSA | | |
| Yes | 32 | 64 |
| No | 18 | 36 |
| SEVERITY | | |
| Mild | 08 | 25.0 |
| Moderate | 15 | 46.8 |
| Severe | 09 | 28.1 |

DISCUSSION:

Our study has demonstrated there is a high prevalence of OSA in patients with MS. This is in concurrence with the statistics reported in the literature [4]. Many studies have proved the association of OSA with various components of the MS. However, literature linking MS as a whole with OSA is scarce. It has also been proven that the prevalence of metabolic syndrome is higher in patients with OSA than in the general population or in obese non-OSA subjects. Our study is unique and different from other studies for being a hospital based prevalence study of OSA in patients with metabolic syndrome. The prevalence of OSA was found to be as high as 64%, which is very high when compared with that reported in former studies [5, 6]. Our study, being a hospital based study wherein nearly one third of patients had already developed end organ damage as a result of MS could have had metabolic derangements for a longer duration. This could have perpetuated a

vicious cycle wherein the occurrence and severity of OSA among these patients could have been higher than that in the general population with MS. Due to the small sample size, it was not possible to sub-group patients on the basis of duration of various components of MS and assess the odds of having OSA or target organ damage [7]. Similarly, former study showed a very high association between the two entities, with OSA subjects at a five-fold risk of having the metabolic syndrome and a positive correlation between AHI and the number of metabolic components present [8]. In our study, Epworth sleepiness scale (ESS) was used as a screening tool in patients presenting with symptoms suggestive of OSA. ESS is a simple, self-administered questionnaire which assesses daytime functioning including concentration levels, work performance and sleepiness [8]. Thus, the present study has demonstrated that there is a very high prevalence of OSA among patients with MS compared to that in the general population.

CONCLUSION:

Incidence of OSA was significantly higher in metabolic syndrome patients and early detection and treatment of OSA in MS patients can prevent development of complications in them due to the combined effects of both diseases. Thus need for screening MS patients for undiagnosed OSA has been reinforced by this study.

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