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ORIGINAL ARTICLE

Frequency of metabolic syndrome in psychiatric patients, is this the time to develop a standardized protocol to reduce the morbidity from an acute care psychiatry unit

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Abstract

Objective: To determine the frequency of Metabolic Syndrome among psychiatric patients and to look for the correlation between the two medical conditions.

Methods: The cross-sectional study was conducted from February to April 2013 at the acute care psychiatry in-patient unit at Kingston General Hospital, Ontario, Canada, and comprised adult patients of both genders diagnosed under the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. For Metabolic Syndrome, definitions outlined by the International Diabetes Federation were used. The patients were divided into two groups on the basis of presence or absence of the Syndrome and were compared for clinical and demographic characteristics. SPSS 22 was used for statistical analysis.

Results: Of the 50 patients in the study, 24(48%) were found to have Metabolic Syndrome. Besides, 40(80%) patients were taking atypical antipsychotics regardless of the diagnosis; 20(83%) among those with the Syndrome, and 20(77%) among those without it.

Conclusions: Patients at high risk of developing metabolic syndrome need to be identified early so that an individualised care plan can be formulated. Identifying the variables to make a management plan is vital.

Keywords: Metabolic Syndrome, Psychiatry, Canada. (JPMA 65: 54; 2015)

Introduction

The Metabolic Syndrome (MS) is a combination of medical disorders which increases the risk of developing cardiovascular disease (CVD), obesity and Diabetes Mellitus (DM).[1,2] It has been estimated that the frequency of obesity and DM has increased during the last two decades in the United States which is directly linked to CVD.[1] MS directly increases the risk of developing CVD. An increased waist circumference (WC) is the central feature and is associated with high fasting blood glucose (FBG) and hypertension as well as lipid dysregulation. Central obesity and insulin resistance are considered high-risk factors for MS.[3,4]

MS is very common in the general population. The prevalence rates have been estimated to be around 25% throughout the world.[5] MS patients are three times more likely to have a heart attack or stroke compared to people without MS, and twice likely to die.[6] According to data from the 3rd National Health and Nutrition Examination Survey (NHANES III 1988-1994), the prevalence of MS in adult American population is 23.7%.[7]

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Studies have shown that the prevalence of MS is much higher among psychiatric patients compared to the general population. Genetic predisposition to weight-gain, lifestyle factors, certain diseases and the effects of the treatment are considered to be the predisposing factors.[8] In addition to the physical manifestations, MS has implications regarding predisposition, precipitation and perpetuation of the illness. The patients describe feelings of their brain being in a fog, constant tiredness, difficult to control, anxiety and weight-gain impacting the already beleaguered self-esteem. The prevalence of MS in people with Schizophrenia and Schizoaffective Disorder has been estimated to range from 2.4% to 62%.[9-12] In a US study, for example, more than 30% patients met the criteria for MS.[13] People with severe and persistent mental illness have a reduced life expectancy. Patients with MS associated with mental illness generally live 25 years less than the general population. Cardiovascular complications are the major cause of death among people with chronic Schizophrenia.[8] Patients with severe and persistent mental illness such as Schizophrenia and Bipolar Disorder are more likely to develop cardiovascular disease,[14] which contributes to increased rates of mortality in this group. A study from Denmark has shown remarkable reduction of life expectancy of 18.7 years in men and 16.3 years in women suffering from Schizophrenia. In patients with Bipolar Disorder, life

expectancy was 13.6 years in men and 12.1 years shorter.[14] More than two-third deaths among mentally ill patients were attributed to physical health, CVD (29.9%), cancers (13.5%) and suicide (13.9%).[15] In the United Kingdom, mortality rate of psychiatric patients with Schizophrenia rose from 1.6 to 2.2 in 2006, compared to 1999, and for those with Bipolar Disorder it went up from 1.3 in 1999 to 1.9 in 2009.[16]

The current study was planned to determine the frequency of MS in individuals admitted to an acute psychiatric unit as well as to look for the correlation between mental health problems and MS in this population.

Patients and Methods

The cross-sectional study was conducted following approval from the Research Ethics Board at Queen's University, Ontario, Canada, from February to April 2013 at the acute care psychiatry in-patient unit at Kingston General Hospital, Canada.

Adult patients of either gender with acute psychiatric problems diagnosed under the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) were enrolled. For MS, definitions outlined by the International Diabetes Federation (IDF) were used. The study population comprised patients with acute symptoms or newly diagnosed psychiatric illnesses. Chronic severe mental illness can present ranging from chronic severe mental illness to an adjustment disorder, primary addiction issues, along with primary triggering factors like medications, socioeconomic and other situations. Such cases were excluded and so were those with dementia. Informed consent from all patients was obtained, and written material was given to each patient, describing the purpose of study and the rights of the subjects.

Medical records of the selected patients were reviewed by the primary physician on a predesigned and pretested form. The data collection form and procedure was rechecked randomly by other investigators. Demographic and clinical data, including age, gender, clinical diagnosis, antipsychotics, and other psychotropic medications, treatment of metabolic conditions like blood pressure (BP), FBG, total cholesterol (TC), triglycerides (TG), high-density lipoprotein (HDL) and low-density lipoprotein (LDL) levels. Those who did not have these investigations done already had morning blood samples drawn after a period of 12-hour fasting and were tested for FBG and lipid profile. Each patient underwent measurement to determine their WC. It was taken at midpoint between iliac crest and lower rib at the level of umbilicus with the patient standing.

For MS, IDF definition[2,17] was used which stipulated any 2 of the following: raised TG>150 mg/dl (1.7 mmol/L) or prescription for lipid abnormality; reduced HDL<40mg/dl (1.03 mmol/L) in males and <50mg/dl (1.29mmol/L) in females; raised BP Systolic >130 or Diastolic >95 or on prescribed drugs; raised FBG>100 mg/dl (5.6mmol/L) or previously diagnosed Type 2 DM; central obesity >94cm for Europoid men and >80cm for Europoid women. In the US, Adult Treatment Panel 3rd Edition (ATP III) values (102cm males and 88cm females) continue to be used.[18] South Asian, Chinese and Japanese have 90cm males and 80cm females, while Mediterranean, Sub-Sahara and Middle East use Europoid criteria and ethnic South and Central Americans use South Asian criteria.

The participants were divided into those diagnosed with MS and without MS. The two groups were compared for all clinical and demographic information using SPSS 22. Both parametric and non-parametric tests were conducted. Frequency command was used to determine rates. Explore command was used to examine data for normality. For continuous data, t test was conducted, while Chi Square test was conducted for categorical data for comparisons.

Results

There were 50 patients with ages ranging from 18 to 72 years and a mean of 42.3±15 years. There were 29(58%) females and 21(42%) males. Depression was found in 16(32%) patients, followed by Bipolar Disorder 15(30%) and Schizophrenia 9(18%). Overall, 40(80%) participants were taking antipsychotics (atypical antipsychotics) and 9(18%) needed antipsychotic poly-pharmacy. Cardiovascular risk factor (smoking) was present in 25(50%) patients. Of the total, 24(48%) patients had MS, while 26(52%) were without it. There were no statistically significant differences in any of the clinical or demographic characteristics between the two groups (Table).

Among those without MS, 20(79.16%) had hypertension, 14(54.16%) had hypertriglyceridaemia, 18(70.83%) had

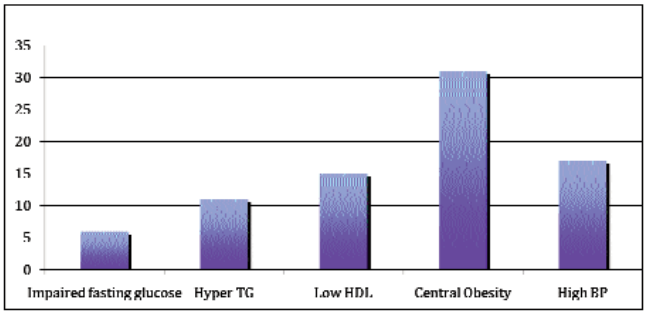

Figure-1: Individual abnormalities in patients not meeting the criteria for Metabolic Syndrome.

Table: Comparison between those with and without metabolic syndrome, where age is mean (SD) and the rest of the variables are number (%).

	Metabolic Syndrome (n=24)	No Metabolic Syndrome (n=26)	*	p
Mean age in years	44.5±15.4	40.38±15.3	0.48	0.348
Male n (%)	9 (37.5)	12 (46.2)		
Female n (%)	15 (62.5)	14 (53.8)	0.384	0.536
Diagnosis n (%)				
Schizophrenia	5 (20.8)	4 (15.4)	0.721	
Depression	5 (20.8)	11 (42.3)	2.645	
Bipolar Disorder	9 (37.5)	6 (23.1)	0.651	0.765
Other non psychotic Disorders	2 (8.3)	1 (3.8)	0.446	
Other psychotic disorders	3 (12.5)	4 (15.4)	0.086	
Treatment n (%)				
Antipsychotic				
Atypical antipsychotic	20 (83.3)	20 (76.9)	0.321	0.874
Polypharmacy	4 (20.8)	6 (15.4)	0.384	
Smoking yes	13 (54.2)	11 (42.3)	0.703	0.402

Analyses were carried out using a Chi square test, except for age, for which a t test was used for comparisons. * Chi square values, except for age, where it is t value.

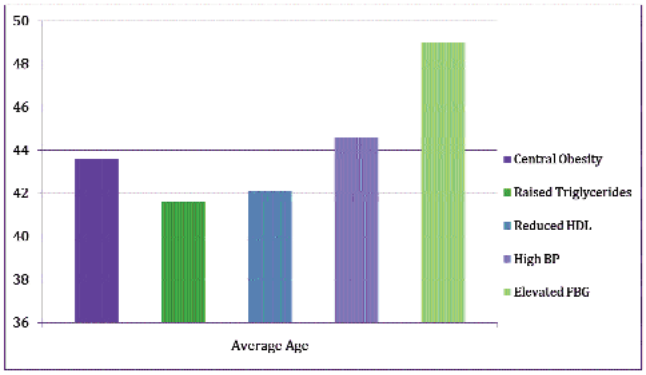

Figure-2: Age relation with features of Metabolic Syndrome.

low HDL and 11(41.66%) had glucose dysregulation (Figure-1). In MS patients, central obesity was found in 7(31%).

The mean age of MS group was 44.5±15.4 years and that of the other group was 40.38±15.3 years. The difference was not statistically significant (p=0.348). None of the differences were statistically different. The difference between the percentage of males and females with hyper-triglyceridaemia was the closest to being significant (p=0.072).

Discussion

There was a high MS prevalence in the study population, with 48% meeting the criteria according to IDF definition. This is similar to 55% reported by a recent study carried out in patients attending a day centre where, it concluded, chronic enduring mental illness was associated with high MS prevalence regardless of diagnosis or use of antipsychotic medication.[19] Similar prevalence was found in a study which examined patients on clozapine and found 46% MS prevalence.[20,21] The study samples represented the group of the patients with a wide range of psychiatric disorders and there was a significant increase in MS prevalence. The rates of MS have been estimated to be between 2.4 to 62.2% in the population. A closer estimate would be with the US population in which rates were found to be nearly 30%. The rates of MS in our study are higher than those reported in the US. These higher rates than the neighbouring US population need to be further investigated.

The current study confirms some of the contributory factors towards the development of MS already described in literature.[21-23] Schizophrenic patients have been found to be more vulnerable to abnormalities of glucose regulation and insulin resistance.[21,24]

The monitoring of MS has not received the place it deserves in health system despite high prevalence rates in psychiatric populations and recommendations from the best practice guidelines.[25,26] The top three barriers are "lack of integration between mental health and primary care system", "patient's lack of resources", and "mental health providers not being trained to provide basic primary care". Experienced providers identified a lack of integrated care and patient characteristics as important barriers to metabolic care, and concluded that the primary care and public health systems are primarily responsible for metabolic treatment.[25,27] The treatment rates of MS are low in adults with mental illness. In a study in patients with Schizophrenia (majority of whom were treated with second-generation antipsychotics), 30% had DM, 64.4%

had hypertension and 88% had abnormal cholesterol level, and they did not receive any treatment.[24]

The issue remains as to who is primarily responsible for looking after or at least for identifying health needs of these patients. It is important to improve collaboration between primary and secondary tiers in the clinical care of patients. Prevention is the first step as clearly identified by the IDF.[18] It is important to educate people about healthy lifestyles, including healthy diet, exercise, smoking and alcohol cessation. There is evidence from research that cardiovascular exercise can be therapeutic in approximately 31% cases with MS. The probable benefit was to reduce TG levels, with 43% showing improvement; but FBG or insulin resistance of 91% had no change.[28]

There is a need to establish well-being clinics in mental health setups. The psychiatrists should consider measuring all the parameters in this regard, like BP and WC during patient's visit as a practice early on in their engagement with them. All patients who are on atypical antipsychotics need to have baseline screening performed and then monitoring of their weight, BP, FBG and lipids. Psycho-education, dietary advice and suggestions to increase physical activity can take precedence over change in medication, especially if there is a risk of relapse in patients who have been stable on them for an extended length of time. Psychiatrists should consider stopping or switching antipsychotics if metabolic problem develops in a close temporal relationship to start a new antipsychotic with a more favourable profile for such issues. If this attempt is unsuccessful, then consultation and referral to family physicians or internist colleagues should be made.

The strength of the study is that it recruited a heterogeneous set of population, attending our acute care in-patients unit in a catchment area service and covered a broad range of psychiatric diagnosis instead of being limited to a particular diagnosis and type of medication.

The limitations of the study were that it had a relatively small sample of 50 patients and was a cross-sectional view of the overall picture. No sample size calculation was done either. Despite the limitation, our findings are consistent with several previous studies. Therefore, it does help to identify patients at the risk of developing MS, which prompts intervention by treating team. Although we selected all patients at the local unit who consented and fulfilled the criteria, but we did not include patients from other local teams due to limited resources. Therefore, caution is advised while generalising our results.

Conclusions

High-risk patients need to be identified at the outset so that an individualised care plan can be formulated and initiated. This would help in enabling patients to understand that the identified needs in their case do include focusing on their physical profile as a priority. The newer atypical antipsychotics do offer a better metabolic profile and in certain cases can result in improvement of the overall picture. This, in addition to psycho-education of the patient with improved access to physical healthcare, can lead to reduced morbidity and mortality. It would be preferable for mental health services to have their own metabolic tertiary care service clinic. The medical care of the patients with mental illness requires effective collaboration between primary care physicians and psychiatrists. There should be "shared care" that focuses on physical health within the context of mental health. There can be closer collaboration with the general practitioner and the related services pertaining to such matters to provide best practice to the patients.

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