

Metabolic Fitness in Psychiatry- Review Article

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Abstract: Metabolic disorders, such as obesity and diabetes, are significant health care concerns. Globally, an estimated 300 million adults are considered obese. Diabetes is a worldwide epidemic, expected to affect more than 366 million adults by 2030. Epidemiologic data suggest that the patients with mental illness are at a greater risk of developing metabolic disorders with diabetes and obesity estimated to be 1.5 to 2 times more common in patients with mental illness than the general population. A Lack of awareness regarding this problem can contribute to serious morbidity and mortality among patients with mental illness, especially in the form of increased cardiovascular disease risk. In recent years, treatment with atypical antipsychotics has come under scrutiny for potential adverse metabolic effects [1]. However, through increased awareness, early interventions, and cooperation among the medical community, caregivers, and patients with mental illness, the deleterious effects of comorbid metabolic disorders may be offset and the positive profile of atypical antipsychotics can be maintained. The purpose of this article is to discuss various metabolic disorders that can occur concurrently with mental illness. It will describe the effects that the disease and antipsychotic treatment can have on these disorders and focus on 4 metabolic disorders that are common in patients with mental illness, hyperprolactinemia, obesity, lipid abnormalities, and impaired glucose metabolism. Monitoring recommendations and treatment challenges in patients with mental illness and comorbid metabolic disorders also will be discussed. Psychiatrists in the next few years can anticipate dramatic shifts in the delivery of Mental Health Care. There is a lack of integration of general medical care with psychiatric care and the related problem of barrier to collaboration. Persons with SMI have elevated rates of morbidity and mortality from a number of medical illnesses like CVD, obesity, type II diabetes and the metabolic syndrome, added to this, is the adverse affect on metabolic and CV health. THE METABOLIC SYNDROME (“Deadly Quartet”, “Insulin resistance syndrome”) A Reversible Life-Threatening Condition. This is the main threat human health for the next decade.

Keywords: Obesity, Diabetes, Metabolic syndrome.

THE METABOLIC SYNDROME

Definition

Metabolic syndrome (MS) is a constellation of lipid and non-lipid risk factors of metabolic origin, closely related to each other via insulin resistance. The Associated features of MS include abdominal obesity, atherogenic dyslipidemia (elevated TG, Small LD Particles, low HDL Cholesterol) raised blood pressure, insulin resistance (with or without glucose intolerance) prothrombotic and proinflammatory states[2].

EPIDEMIOLOGY

It is a major public health problem recognized to be globally epidemic by the WHO [14]. An increased

prevalence globally. The Prevalence of MS in US 31.0% [16]. Psychiatric patients (SMIs) have a much higher chance of developing the MS. The overall rate of occurrence in schizophrenia population was 40.9% (51.6% for women; 36.0 for men) – (CATIE). MS is alarmingly prevalent in patients with BPD. Increased metabolic anomalies and central obesity in patients with MDD is a threatening factor [6]. Its prevalence is 2–3 times higher in people with severe psychiatric illnesses [15].

Risk groups associated with increased odds of the ms

- Age
- Higher body mass index (25)

- Women postmenopausal status
- Current smoking
- Low household income
- High carbohydrate intake
- Physical inactivity

MS – The Metabolic Tetrad

- Glucose dysregulation
- Hyper tension
- Dyslipidemia
- Obesity

All these entities are highly prevalent, easily assessed, potentially deadly, often preventable, and usually treatable.

Table-1: Identification of Metabolic Syndrome Markers

Risk factors	Defining level
*Triglyceride	150 mg/dl
HDL – Cholesterol	
Men	40 mg/dl
Women	50 mg/dl
Blood pressure	130 / 85 mm of Hg
Fasting blood glucose	110 mg/dl
Waist circumference	
Men	102 cm (40 in)
Women	88cm (35 in)
Substituted BMI(WHO)	30 Kg/m ²

Three Risk Factors are required for diagnosis.

Treatment goals for patients with metabolic syndrome

BLOOD PRESSURE

With out diabetes or chronic kidney disease 140/90 mm of Hg

With diabetes or chronic kidney disease 130/90 mm of Hg

LIPIDS

Primary target: low – density lipoprotein

High-risk a 100mg/dl

Moderate-risk b 130mg/dl

Low – risk c 160mg /dl

Secondary target: non- high- density lipoprotein

Triglycerides 150 mg/dl

High-density lipoprotein 45 mg/dl

DIABETES

Hemoglobin A1c 7.0 mg /dl

Preprandial glucose 90-130mg /dl

1-to 2- hour postprandial glucose 180 mg /dl

Comorbid BP and Obesity

Treatment of Bipolar Disorder before or concurrently with obesity is essential. Use mood-stabilizing/ antidepressant agents to achieve mood stabilization before using antiobesity treatments that may have mood- destabilizing properties. Use patient education, supportive therapy, behavioral weight management, cognitive behavior therapy as initial adjunctive treatment for obesity and BP. Sometimes we will have to treat obesity before BP.

Comorbid BP and Obesity

- Reduce factors that destabilize mood, eating behavior, and or weight
- Alcohol, drug abuse (e.g.) stimulants, supplements with ephedra, hoodia)
- Excessive caffeine, tobacco use
- Antidepressants, OTC weight loss agents
- Medical illness (e.g) thyroid disease)
- Poor dietary habits
- Poor sleep habits, sleep disorders
- Psychosocial stress

Comorbid BP and Obesity Conclusions

Start with medications that are weight neutral, associated with minimal weight gain or associated with weight loss and have good metabolic profiles. Lamotrigine lithium or ziprasidone aripiprazole or antiobesity monotherapy or patients who refuse standard treatment or on patients who refuse standard treatment, as adjunctive therapy. Always assesses affective symptoms weight change, dietary habits, eating behavior, physical activity, and any comorbid symptoms (including binge eating) concurrently [4].

Treatment of Uncomplicated Obesity

Behavioral weight management – 3 Goals

Decreasing caloric intake, increasing physical activity and learning cognitive – behavioral strategies to reinforce positive changes in dietary habits and physical activity

Pharmacotherapy number of drugs available for the management of persons with Obesity

Appetite suppressants – agents that reduce food intake by acting on the CNS Metabolic agents – agents that modify fat absorption or otherwise alter metabolism

Bariatric Surgery

An option for severe and treatment resistance obesity – restrictive procedures or gastric bypass

Schizophrenia and comorbid metabolic disorders

Comorbid metabolic disorders in patients with schizophrenia are underrecognized by many health care professionals and patients. That lack of awareness can

contribute to serious morbidity and mortality in patients with schizophrenia. Patients with schizophrenia may be at greater risk for metabolic disorders such as insulin resistance, lipid abnormalities, and weight gain³. In addition, although the use of atypical antipsychotic in the treatment of schizophrenia offers many positive benefits and may reduce some of the factors related to the morbidity and mortality of the disorder, these drugs appear to be associated with varying degrees of comorbid metabolic disorders such as metabolic syndrome, and more serious consequence, such as cardiovascular disease. Person suffering from schizophrenia mostly have a more sedentary lifestyle, with little physical exercise, poor dietary habits and increased smoking, which contributes to metabolic syndrome[9]. Correll *et al.*[10] reported that the prescribing multiple antipsychotics was associated with a significant increase in the incidence of metabolic syndrome (50%) compared with antipsychotic monotherapy (34%). However, the combination of clozapine with aripiprazole has been found to reduce triglyceride levels, LDL cholesterol, BMI and waist circumference, as well as negative symptoms, in patients with schizophrenia and metabolic syndrome[11]. With proper awareness and cooperation on the part of the medical community, caregivers, and patients, the detrimental consequences that may result from the metabolic disorders addressed in this article can be at least partially offset[8]. Many studies have reported chronic subclinical inflammation to be part of metabolic syndrome [12]. Although inflammatory markers are not currently included in the diagnostic criteria for metabolic syndrome, they have been linked to it, particularly CRP, TNF- α , IL-6, adiponectin and leptin, which are present in visceral fat[13].

A Brief Explanation of Risk

A risk factor is a manifestation or a laboratory measurement that expresses the likelihood that an individual or a group will develop a disease over a defined period of time. Specific diseases can have modifiable and non-modifiable risk factors. For example, modifiable risk factors for coronary heart disease include obesity, dyslipidemia, diabetes, hypertension, smoking and psychological state.

Body Weight and Obesity

Waist Circumference

This is another useful measure because it is an indicator of the amount of abdominal fat. It is easy and cheap and is highly correlated with specific measures of abdominal fat including more complex imaging.

Waist –to–Hip Ratio

Expression of abdominal fat in this form is no longer considered necessary.

Effects of Weight Gain in People with Schizophrenia [7]

- Health risks
- Hypertension
- Atherosclerosis
- Type 2 diabetes mellitus
- Cardiovascular disease and stroke
- Stigmatization
- Non-adherence to treatment
- Further impairment of quality of life
- Social withdrawal

Effect on Weight of Different Anti-Psychotics [5]

Marked Weight Gain

Zotepine
 Quetiapine
 Clozapine
 Olanzapine
 Chlorpromazine

Slight Weight Gain

Fluphenazine
 Flupentixol
 Amisulpride
 Haloperidol

Moderate Weight Gain

Risperidone
 Clopenthixol
 Sulpiride

Slight Weight Gain

Amisulpride
 Halperidol
 Fluphenazine

No Weight Change

Ziprasidone

Weight Loss

Molindone
 Pimozide

No data available

Aripiprazole

CONCLUSION

The prevalence of metabolic disorder is increased in patients with mental illness. There are several mechanisms, including hereditary factors, lifestyle, and drugs to explain this phenomenon. Further research is needed to delineate the underlying causes more precisely if measures aimed at reducing metabolic disorders in those with mental illness are to be implemented. The effect of atypical antipsychotic drugs on weight gain and glucose homeostasis has made psychiatrists aware of the risk of diabetes in patients with mental illness.

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