

NEUROPSYCHOLOGICAL DISORDERS AND QUALITY OF LIFE IN WOMEN WITH METABOLIC SYNDROME

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Abstract

Metabolic syndrome (MetS) is a multifactorial condition associated with obesity, insulin resistance, dyslipidemia and arterial hypertension. In recent years, increasing attention has been paid to the relationship between metabolic abnormalities and neuropsychological disorders. Cognitive impairment, anxiety, depressive symptoms, stress and sleep disturbances may occur in patients with MetS and can significantly reduce quality of life.

The aim of this study is to assess the relationship between neuropsychological disorders and health-related quality of life in women with metabolic syndrome.

A prospective comparative study is planned involving women with MetS and an age-matched control group without MetS. Clinical and neurological examinations will be performed. Cognitive function will be assessed using the Montreal Cognitive Assessment (MoCA) and, when indicated, Addenbrooke's Cognitive Examination III (ACE-III). Anxiety and depressive symptoms will be assessed using the Hospital Anxiety and Depression Scale (HADS) and Depression Anxiety Stress Scale-21 (DASS-21). Health-related quality of life will be evaluated using the EQ-5D questionnaire. Biochemical parameters, including glucose, glycated hemoglobin, lipid profile, insulin, homocysteine and C-reactive protein, will also be analyzed.

It is expected that women with MetS will demonstrate a higher frequency of cognitive and affective disturbances and lower quality-of-life scores compared with women without MetS. The severity of neuropsychological symptoms is expected to correlate with metabolic abnormalities and quality-of-life impairment.

Early identification of neuropsychological disorders may improve individualized management and contribute to better quality of life in women with metabolic syndrome.

Keywords: metabolic syndrome, women, cognitive impairment, anxiety, depression, stress, quality of life, MoCA, HADS, EQ-5D.

Introduction

Metabolic syndrome represents an important medical and social problem because of its increasing prevalence and association with cardiovascular, endocrine and neurological complications. The syndrome is characterized by the coexistence of several metabolic abnormalities, including abdominal obesity, insulin resistance, dyslipidemia and arterial hypertension.

Although the cardiovascular consequences of MetS have been extensively investigated, its influence on brain function and psychological well-being has received increasing attention. Previous studies have demonstrated associations between metabolic syndrome and cognitive dysfunction, although the strength of these associations differs between cognitive domains and study populations.

Cognitive impairment may manifest as reduced attention, memory difficulties, impaired executive functions and decreased processing speed. In addition, anxiety and depressive symptoms may accompany cognitive complaints and negatively influence everyday functioning.

The coexistence of metabolic and neuropsychological abnormalities may create a clinically unfavorable cycle. Metabolic disturbances may contribute to cognitive and emotional disorders, while depression, anxiety and cognitive impairment may reduce physical activity and adherence to dietary and therapeutic recommendations.

Health-related quality of life therefore represents an important integrated outcome in patients with MetS.

Aim

To evaluate the prevalence and characteristics of neuropsychological disorders and their relationship with health-related quality of life in women with metabolic syndrome.

Materials and Methods

The study is planned as a prospective comparative investigation.

The study population will include women with clinically diagnosed metabolic syndrome who receive outpatient or inpatient medical care. An age-matched control group without metabolic syndrome will also be examined.

The clinical assessment will include anthropometric measurements, arterial blood pressure, medical history, comorbidities, lifestyle characteristics and neurological examination.

Biochemical investigations will include fasting glucose, glycated hemoglobin, lipid profile, insulin, homocysteine and C-reactive protein.

Cognitive function will be assessed using MoCA. Patients with suspected cognitive impairment will undergo additional assessment using ACE-III.

Psychological status will be evaluated using HADS and DASS-21.

Quality of life will be assessed using EQ-5D.

Statistical analysis will include comparison between groups and correlation analysis between neuropsychological, metabolic and quality-of-life parameters. The statistical significance threshold will be established before analysis.

Expected Results

It is expected that women with metabolic syndrome will demonstrate a higher frequency of cognitive complaints and objectively measurable cognitive impairment compared with the control group.

The most clinically relevant abnormalities are expected to involve attention, executive functions, memory and processing efficiency.

An increased prevalence of anxiety and depressive symptoms is also expected among women with MetS.

The study is expected to identify an association between the severity of neuropsychological symptoms and reduced health-related quality of life.

Particular attention will be paid to the relationship between:

- cognitive performance and insulin resistance;
- depressive symptoms and metabolic control;
- anxiety and quality of life;
- inflammatory activity and neuropsychological status;
- combined cognitive-affective disorders and EQ-5D scores.

Patients with combined cognitive and affective symptoms are expected to demonstrate the greatest reduction in quality of life.

Discussion

The potential association between MetS and cognitive impairment may be explained by several mechanisms. Insulin resistance, chronic inflammation, endothelial dysfunction, oxidative stress and vascular abnormalities can adversely affect cerebral function.

Metabolic syndrome may also influence brain function indirectly through sleep disorders, reduced physical activity and psychological stress.

Cognitive impairment and depression are particularly important because they may interfere with adherence to treatment. Patients experiencing fatigue, poor concentration or depressive symptoms may have difficulties maintaining regular physical activity and dietary modifications. Therefore, quality of life should be evaluated alongside metabolic and neurological parameters. The use of standardized instruments such as MoCA, HADS, DASS-21 and EQ-5D provides an opportunity to assess several clinically relevant dimensions simultaneously. A multidimensional assessment may help identify patients who require additional neurological, psychological or rehabilitation interventions.

Conclusion

Neuropsychological disorders may represent an important component of the clinical burden of metabolic syndrome in women. Cognitive impairment, anxiety and depressive

symptoms may coexist and contribute to a substantial reduction in health-related quality of life.

The planned study will provide an opportunity to investigate the relationship between metabolic abnormalities, neuropsychological status and quality of life.

Early screening using standardized neuropsychological instruments may facilitate identification of high-risk patients and support individualized multidisciplinary management.

Conflict of interest: The authors declare no conflict of interest.

Keywords: metabolic syndrome; women; neuropsychological disorders; cognitive impairment; anxiety; depression; quality of life; multidisciplinary care.

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