

# Influence of Metabolic Syndrome in Low Back Pain in Benin People

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## Abstract

**Objective:** To determine the frequency and impact of metabolic syndrome (MS) in patients with low back pain in rheumatology unit in Benin. **Patients and Methods:** Analytic cross-sectional study conducted between June and December 2016 in the rheumatology hospital unit of National Hospital University Hubert Koutoukou Maga of Cotonou. 82 patients with mechanical low back pain were selected. The prevalence of MS was defined using the criteria of the International Diabetes Federation 2005. The data were analyzed using epi data and SPSS17.0 software. **Results:** The mean age was  $50.4 \pm 14.9$  [12 - 90] years. The sex ratio was 0.82. 29.3% patients have met diagnostic criteria for MS. The mean duration of back pain was  $40 \pm 17.2$  [3 - 120] days. Diseases associated with low back pain were as follow: lumbar intervertebral disk degeneration (34.1%), disk herniation (13.4%), facet joint arthrosis (18.3%), degenerative spondylolisthesis (11%), degenerative lumbar spinal stenosis (6.1%) and related forms (17.1%). MS observed in 24 patients was characterized by the frequent association of abdominal obesity (24 cases), arterial hypertension (22 cases), HDL hypocholesterolemia (8 cases), hyperglycemia (12 cases) or hypertriglyceridemia (7 cases). The presence of the MS was associated with a decreased response to the medical treatment ( $p < 0.01$ ). **Conclusion:** The MS is frequent in patients with low back pain in rheumatology unit at Cotonou and influence the treatment response. The management of these patients must be integrated into a multidisciplinary approach including the rheumatologist and nutritionist.

## Keywords

Low Back Pain, Metabolic Syndrome, Cotonou

## 1. Introduction

According to the International Federation of Diabetes in 2005, metabolic

syndrome (MS) is defined by the presence of several metabolic abnormalities (hyperglycemia, Hypertension, HDL hypocholesterolemia, hypertriglyceridemia, abdominal fat) [1]. It's a frequent syndrome in both less developed and well developing countries. Its association with osteoarthritis is common. obesity plays an important role in the metabolic syndrome and affects both cardiovascular and musculoskeletal pathologies. Obesity increases the risk of radiographic osteoarthritis. The association with hip and hand osteoarthritis is weaker, but it implies that excess adipose tissue produces humoral factors, altering articular cartilage metabolism [2] [3]. It has been postulated that the leptin system could be a link between metabolic abnormalities in obesity and increased risk of osteoarthritis [2] [3] [4]. In black Africa, obesity is seen as a sign of wealth. Its frequency is increasingly high in the Benin population and its prevalence reaches nearly 20% of the population [5]. Much work has been devoted to the influence of this syndrome on knee osteoarthritis [6]. Low back pain is the first pattern in rheumatology in Benin. It predominates in the young adult, the elderly and in both sexes. And its relationship with the metabolic syndrome is not known in our country. The aim of this study was to determine the frequency and impact of metabolic syndrome (MS) in patients with low back pain in rheumatology Unit in Benin.

## 2. Patients and Methods

We made an analytic cross-sectional study conducted between June and December 2016 in rheumatology hospital unit of National Hospital University Hubert Koutoukou Maga of Cotonou. Eighty-two (82) patients with mechanical low back pain were recruited exhaustively for 12 months. The prevalence of MS was defined using the criteria of the International Diabetes Federation 2005: waist > 94 cm in men or >80 cm in women, associated with at least two of following factors:

- Triglycerides (TG) > 1.5 g/L,
- HDL cholesterol < 0.4 g/L in men and <0.5 in women,
- Systolic blood pressure > 130 mmHg or diastolic blood pressure > 85 mmHg,
- Glycemia > 1 g/L.

Patients included in the study met the following criteria:

- To be followed in the rheumatology hospital unit during the study period,
- Had submitted chronic low back pain (more than three months),
- Having made the X-ray and Scanner of lumbar spine and the metabolic laboratory tests (glycemia, TG, cholesterol),
- Having honored the appointment of follow-up visit for 6 months.

Patients who did not realized the diagnostic test were not include in the study

The data were analyzed using epi data and SPSS 17.0 software.

## 3. Results

The mean age of the patients was  $50.4 \pm 14.9$  [12 - 90] years. The sex ratio was 0.82 (37 men/45 women). Twenty-four (29.3%) patients have met diagnostic

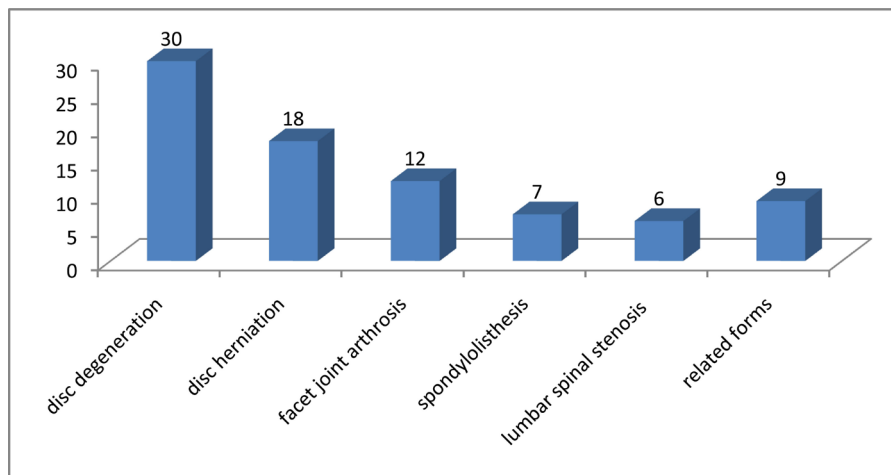
criteria for MS. The mean duration of back pain was  $40 \pm 17.2$  [3 - 120] days. Diseases associated with low back pain are summarized in **Figure 1**.

MS observed in 24 patients was characterized by the frequent association of abdominal fat with the other items summarized in **Figure 2**.

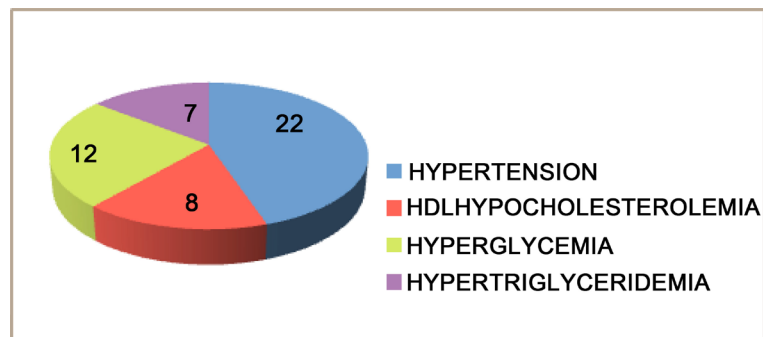
Presence of the MS was associated with a decreased response to the medical treatment after three months ( $p < 0.01$ ). **Table 1** highlights correlation between MS and low back pain.

#### 4. Discussion

The high prevalence of metabolic syndrome, the mean age and female predominance in our series were observed in other African works [7] [8] [9] [10]. The prevalence of MS is more than 27.3% found by Oniakitan, *et al.* in Togo [7] and



**Figure 1.** Etiology of low back pain in the unit.



**Figure 2.** Distribution of metabolic syndrome in the patients.

**Table 1.** Influence of metabolic syndrome on response of treatment.

Residual Pain after medical treatment	Metabolic Syndrome		Total	Statistic Test
	2abnormalities	>2abnormalities		
<25%	2	5	7	$X^2 = 6.454$ $P < 0.01$
>75%	14	3	17	
Total	16	8	24	

less than the 58.7% found by El Ouadih *et al.* in Morocco [8]. All this clearly denotes the importance of MS in developing countries. Female predominance is explained by the complex of superiority of men who take time to manifest their pain in our country.

In our study, more abnormalities of metabolic syndrome increased, more the response of treatment was bad ( $P > 0.001$ ). Few studies have been conducted showing association between chronic low back pain and metabolic syndrome and risk factors identified on metabolic syndrome were various [8] [9] [10] [11]. According to Duroz, *et al.*, high body mass index, chronic low back pain, old age was associated with bad evolution of back pain [8]. For Ono, association was significantly in women and there was no association between low back pain and metabolic syndrome in men [9]. Vismara, *et al.* showed that obese individuals with chronic low back pain presented higher degree of spinal impairment when compared to those without chronic low back pain [10]. On the Contrary, Yip, *et al.* found no association between excessive weight, tall stature and an increased risk of low back pain in Hong Kong Chinese middle-aged women [11]. Conversely, their results indicated that a high waist to hip ratio was associated with a lower risk of severe low back pain but they didn't evaluate the association between underweight/obesity, bone mass density and low back pain.

Although the size of our diet is low, it traces the influence of the metabolic syndrome on the presence of low back pain. Large-scale studies could be conducted to confirm these results. Nevertheless, it is possible to understand that the management of patients suffering from low back pain must be done according to a multidisciplinary approach.

## 5. Conclusion

Metabolic syndrome was frequent in patients with low back pain in rheumatology unit at Cotonou and influenced the treatment response. For this reason patients with low back pain can be screened for metabolic syndrome and preventive measures can be taken. The management of these patients must be integrated into a multidisciplinary approach including the rheumatologist and nutritionist.

## Conflict of Interest Statement

The authors declare no conflict of interest in relation with this article. Ethical approval was obtained for this work.

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