

Type 1 diabetes and oxidative stress markers

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INTRODUCTION

The oxidative stress is associated with a large spectrum of inflammatory chronic diseases.

Type 1 diabetes, an autoimmune condition, is also a disease in which oxidative stress is involved in the pathogenesis of various diabetic complications and considered as one of the hypothetical causes.

In this study, we tried to assess some markers of oxidative stress and their relationship with the course of type 1 diabetes (T1D). This is the first investigation on the population of the region of Setif (Algeria).

MATERIAL & METHOD

This study was carried out on 76 patients with T1D (men and women) and 10 healthy controls.

Patients and controls were stratified according to their gender and the age of onset of T1D.

They underwent analyzes of usual biochemical parameters (glycemia, HbA_{1c}, total cholesterol, triglycerides, creatinine, urea and arterial pressure), and some oxidative stress markers (SOD, catalase (CAT), xanthine oxidase (XO), MDA and reduced glutathione (GSH)).

RESULTS

Results show a highly significant increase in blood sugar and HbA_{1c}, as well as in plasma creatinine and urea levels in diabetic patients compared to controls ($p \leq 0.001$).

Cholesterol levels show no significant difference, while triglyceride values are significantly elevated compared to healthy people.

Levels of MDA, a lipid peroxidation product, are significantly elevated compared to control values.

Regarding the antioxidants, there is a significant increase in SOD and CAT activities and the reduction in the level of GSH ($p < 0.05$). XO was higher in men than in women.

CONCLUSION

The oxidant / antioxidant balance is altered during diabetes.

The use of oxidative stress biomarkers such as MDA and XO in type 1 diabetics may be a good tool in monitoring progressive complications. However, this study remains preliminary and requires further investigations on a wider population to prevent, more significantly, the various complications of diabetes.