ABSTRACT

Department of Obstetrics & Gynecology and Clinical Pathology

Mohamed Abd El Hadji (MD) and Magdi A. Zidan (MD)

STATES IN PATTERNS WITH PRECEPITALISMA
FREE RADICAL PROPAGATION AND ANTIOXIDANTS

AIN SHAMS MEDICAL JOURNAL

Vol 31 No 1, 2 & 3 (2000)
The aim of the present study was to evaluate simultaneously lipid peroxidation and antioxidant status in preclamptic compared to nonpregnant and normal pregnant women by measuring malondialdehyde (MDA), thiobarbituric acid-reactive substances (TBARS), and superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPx) activities. The study involved 30 healthy pregnant women, 30 preclamptic women, and 30 nonpregnant women. The results showed that the preclamptic group had significantly higher levels of MDA, TBARS, and lower levels of SOD, CAT, and GPx compared to the normal pregnant and nonpregnant groups. These findings suggest that preclampsia is associated with oxidative stress and a decreased antioxidant status, which may contribute to the development of the disease. Further studies are needed to investigate the potential mechanisms underlying these observations.

Subjects and Methods

Thirty healthy pregnant women, 30 preclamptic women, and 30 nonpregnant women were recruited for the study. The preclamptic group was defined as women with a blood pressure > 140/90 mmHg or proteinuria > 0.3 g/day. The nonpregnant group served as controls. Serum samples were collected at the first trimester and at the time of delivery. The samples were analyzed for MDA, TBARS, SOD, CAT, and GPx activities using standard biochemical assays. The results were compared using statistical analysis.

Little is known about the role of antioxidants in the prevention of preclampsia. The results of the present study suggest that a decrease in antioxidant status may be a contributing factor in the development of preclampsia. Further studies are needed to investigate the potential therapeutic strategies for improving antioxidant status in preclamptic pregnancies.
Blood samples were collected by venepuncture during the 31st-38th week of pregnancy. The following investigations were done: serum cell GSH-Px and red blood cell SOD.

Serum lipid peroxidation were measured according to Yagi's method (1984), which determines the reaction occurring between thiobarbituric acid reactivity (TBA) and peroxides. TBA was taken as a standard. With serum preincubation, TBA was assayed by using a spectrophotometrically.

A description of women according to the clinical and laboratory parameters including age and gestational age was given in Table 1. There were no significant difference regarding the study and control groups. The extent of lipid peroxidation levels and antioxidant status are given in Table 2. Patients with severe pre-eclampsia (SPE) showed a significant higher levels of LP (3.97 ± 1.74 U/mL) and serum levels of GSH-Px activity (1092 ± 19 U/L) compared with the control group (2.59 ± 0.6 U/mL and 57.6 ± 1.4 U/L, p < 0.05). The patients with MPE (3.29 ± 0.6 U/mL and 2.06 ± 0.05) showed a significant lower levels of LP (1.58 ± 0.34 U/mL) and GSH-Px activity (314 ± 71 U/L) compared with the control group (2.59 ± 0.6 U/mL and 57.6 ± 1.4 U/L, p < 0.05)
The correlation between serum levels of LDL and gene expression, if significant, was found with serum cholesterol, with no correlation found with serum levels. No correlation was found with the gene expression and cell conditions. The results of patients with MPE and SHP were found with the cell conditions. The results of the correlation of the group with the cell conditions are given in Table (3).
**DISCUSSION**

| Table (2): Correlation coefficient (r) between selenium levels of hCG and lipid peroxidation in pregnancy. Like previous products that have already raised the levels of plasma lipid peroxide and reduced the number of studies and determinations, fatty acids (OAG), cholesterol, and other components of hCG are produced in the liver, while others (such as antioxidants) affect the number of studies and issues. Oxygen radicals are important in the presence of hCG.

<table>
<thead>
<tr>
<th>Selenium</th>
<th>GSH-Px</th>
<th>Cofactor</th>
<th>Ferritin</th>
<th>C reactive protein</th>
<th>HCG</th>
<th>Sodium</th>
<th>LDL-C</th>
<th>HDL-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.35</td>
<td>0.26</td>
<td>0.32</td>
<td>0.36</td>
<td>0.38</td>
<td>0.25</td>
<td>0.3</td>
<td>0.24</td>
<td>0.25</td>
</tr>
</tbody>
</table>

**Table (2):** Selenium levels of hCG and lipid peroxidation in pregnancy.

| Activity in common with peroxidation and antioxidants. |
| Fulvination of hCG, P4 and antioxidants (SOD) GSH-Px and selenium levels of hCG. |

**Table (2):** Selenium levels of hCG and lipid peroxidation in pregnancy.

| Activity in common with peroxidation and antioxidants. |
| Fulvination of hCG, P4 and antioxidants (SOD) GSH-Px and selenium levels of hCG. |

**Table (2):** Selenium levels of hCG and lipid peroxidation in pregnancy.

| Activity in common with peroxidation and antioxidants. |
| Fulvination of hCG, P4 and antioxidants (SOD) GSH-Px and selenium levels of hCG. |

**Table (2):** Selenium levels of hCG and lipid peroxidation in pregnancy.

| Activity in common with peroxidation and antioxidants. |
| Fulvination of hCG, P4 and antioxidants (SOD) GSH-Px and selenium levels of hCG. |

**Table (2):** Selenium levels of hCG and lipid peroxidation in pregnancy.

| Activity in common with peroxidation and antioxidants. |
| Fulvination of hCG, P4 and antioxidants (SOD) GSH-Px and selenium levels of hCG. |

**Table (2):** Selenium levels of hCG and lipid peroxidation in pregnancy.
The proposed mechanism involves the translation of lipopolysaccharide (LPS) into lipids, which are then processed by the host immune system to produce pro-inflammatory cytokines. This process involves the activation of macrophages and other immune cells, leading to the production of pro-inflammatory cytokines and the release of reactive oxygen species. The resulting inflammation can lead to tissue damage and organ dysfunction, contributing to the development of sepsis.

The primary effects of lipopolysaccharide are mediated through the activation of pattern recognition receptors (PRRs) on the surface of immune cells. These receptors recognize conserved molecular patterns of pathogens and initiate an innate immune response. The activation of PRRs leads to the production of pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6), and interleukin-1β (IL-1β), which play a central role in the pathogenesis of sepsis.

The inflammatory response induced by lipopolysaccharide involves the recruitment of neutrophils and monocytes to the site of infection. These immune cells release reactive oxygen species and enzymes, which contribute to tissue damage. The release of cytokines and chemokines further amplifies the immune response, leading to organ dysfunction and multi-organ failure.

In conclusion, the role of lipopolysaccharide in the development of sepsis is multifaceted, involving the activation of immune cells, the release of pro-inflammatory cytokines, and the amplification of the inflammatory response through a positive feedback loop. Understanding the mechanisms of lipopolysaccharide action is crucial for the development of effective therapeutic strategies to prevent and treat sepsis.

Reference:
proteins. They suggested that the reduction in the antioxidant buffering level could account for several important pathophysiologcal features of PHN, such as decreased calcium retention, decreased cell deformability, and endothelial damage.

This study has demonstrated a significant decrease in red blood cell GSH-Px and SOD activity in pregnant women with preclampsia. These results support data from Popescu et al. (1996). Their conclusion was based on a study of 14 normal and 13 preclamptic patients, with a marked increase in membrane lipid peroxides from this organ. Important questions remain unanswered about the implications of preclampsia. It is unclear whether the low status of antioxidants in pregnant women preclampsia is a primary event associated with the pathogenesis of preclampsia or a secondary event related to disease processes.

Whatever the order of events, therapeutic strategies could be developed to prevent or lower the incidence of PHN in preclamptic women. Selenium supplementation has been shown to increase the activity of GSH-Px and reduce the incidence of PHN. Selenium was found to be an important antioxidant compound in the blood cell system. Relatively low blood levels of selenium were obtained in patients with PHN. However, this does not support those obtained by Laverdiere et al. (1993) regarding the antioxidant (PHN), especially in those with pregnancy-induced hypertension.
REFERENCES

Incidence of the disease value in prevalence or lowering the value. Antioxidation therapy might be a role in preventing and controlling some chronic illness. The change of antioxidant activity in disease may also be a determinant in the development of oxidative-stress-related diseases.

Our findings are centered on the lack of positive correlation found in blood samples. Lowering the increased peroxidation levels in pregnant women and their infants leads of GSH-PX and vitamin E in some cases. Therefore, further research is needed.
Free Radical Propagation and Oxidation Studies in Plants
