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## Alteration of antioxidant defense status precedes humoral immune response abnormalities in macrosomia

### Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Data Interpretation
- E** Manuscript Preparation
- F** Literature Search
- G** Funds Collection

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### Background:

### Summary

This study aimed to investigate whether the anomalies affecting the antioxidant and humoral immune defenses could start at birth and to check whether the decrease in antioxidant defenses may precede the immune abnormalities in macrosomic newborns.

### Material/Methods:

Thirty macrosomic and 30 sex-matched control newborns were recruited for a retrospective case-control study at the Maghnia Maternity Hospital of Tlemcen Department (Algeria).

### Results:

The serum IgG levels were similar in both groups. However, plasma ORAC, albumin, vitamin E, SOD, CAT and GSH-Px levels were significantly decreased in macrosomic as compared to control newborns, yet no difference was observed after adjustment for weight. Additionally, serum concentrations of complement C3, MDA and XO were significantly higher in macrosomic as compared to controls before adjustment for weight. Moreover, macrosomia was significantly associated with high levels of complement C3 (OR=8,  $p=0.002$ ); whereas no association with those of IgG was observed (OR<1,  $p>0.05$ ). Furthermore, macrosomia was significantly associated with low levels of ORAC (OR=4.96,  $p=0.027$ ), vitamin E (OR=4.5,  $p=0.018$ ), SOD (OR=6.88,  $p=0.020$ ) and CAT (OR=5.67,  $p=0.017$ ), and with high levels of MDA (OR=10.29,  $p=0.005$ ).

### Conclusions:

Abnormalities of the humoral defense system in excessive weight could be preceded by alterations of the anti-oxidative defense and by inflammatory response and activation of innate immunity at birth. Additionally, excessive weight could be a potential factor contributing to decreased anti-oxidative capacity and increased oxidative stress.

### key words:

antioxidant defense • humoral response • macrosomic newborns • oxidative stress

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