Antioxidants for preventing pre-eclampsia

01 August 2008

Current evidence does not support routine prescription of antioxidants during pregnancy to reduce the risk of pre-eclampsia.

RHL Commentary by Boulvain M

1. EVIDENCE SUMMARY

This systematic review (1) was updated in January 2008 and includes several new well-conducted trials with large numbers of participants. The previous version (2) of this review, which included lower-quality trials, had reported that antioxidants may be a promising intervention for the prevention of pre-eclampsia. The updated review concludes that use of antioxidants during pregnancy is unlikely to reduce the risk of pre-eclampsia.

The updated review analysed data from ten trials involving 6533 women pregnant women taking, or not taking, antioxidant regimens (mainly vitamin C and E) to prevent pre-eclampsia. The review included randomized controlled trials that had compared antioxidants (vitamin C and/or E, selenium, lycopene or red palm oil) with no antioxidants or placebo and reported on clinical outcomes, namely pre-eclampsia, hypertension, preterm delivery, small-for-gestational age, perinatal mortality, birth weight and gestational age at birth. The updated review did not include a large (5021 women) quasi-randomized trial published in 1942 (3) which had considerable influence on the results of the previous version of the review. Comparative studies without random allocation of subjects and trials conducted with women with a diagnosis of pre-eclampsia were excluded. The trials were identified by electronic searches of the Cochrane Controlled Trials Register, MEDLINE and EMBASE, using standard methodology of the Cochrane Collaboration. Data analysis and reporting also followed standard Cochrane methods.

The main results suggest that the risk of pre-eclampsia is not reduced when antioxidants are administered during pregnancy. Many pre-specified subgroup analyses are presented in the review according to women's risk status, trial quality, gestational age at entry, and dose level. All subgroup analyses are consistent with the main analysis, which further suggest that antioxidants are not beneficial for the prevention of pre-eclampsia and other unfavorable pregnancy outcomes.

The review is thorough and free from bias. The data are clearly tabulated and graphically presented for overall findings and for different subgroups. The main conclusion is supported by the data presented.

2. RELEVANCE TO UNDER-RESOURCED SETTINGS
2.1. Magnitude of the problem

Maternal mortality is very high in some under-resourced settings and hypertensive disorders of pregnancy are among its leading causes (4). Even in well-equipped hospitals hypertensive disorders are the cause of a large proportion of maternal mortality and morbidity.

Pre-eclampsia is difficult to detect at an early stage in many settings and screening tests are not available (5). Oxidative stress is among the potential underlying causes of pre-eclampsia. The administration of antioxidants to all pregnant women or only to high-risk women has been proposed to decrease the incidence of pre-eclampsia. Unfortunately, the early promises of relatively small trials were not confirmed by well conducted larger trials. There are, however, several ongoing trials that may provide further evidence in this area.

2.2. Applicability of the results

Most of the available evidence is based on trials conducted in developed countries. Applicability of the results to under-resourced settings is therefore questionable. A trial, sponsored by WHO, is currently under way in several developing countries and results may help to clarify this issue.

2.3. Implementation of the intervention

Based on evidence presented in this review it is not possible to recommend the prescription of antioxidants during pregnancy for the specific reason of preventing pre-eclampsia. Should results of ongoing trials change this conclusion, the intervention would however be feasible and affordable in under-resourced settings.

The findings of this review do not imply that pregnant women should reduce their dietary intake of fruits and other foods rich in such vitamins. Intake of vitamin C (through regular diet or through prescribed vitamin C supplementation) may improve the absorption of iron, thus improving the effectiveness of iron supplementation.

3. RESEARCH

At the present time large randomized controlled trials on the prevention of pre-eclampsia with antioxidants are recruiting or are in the analysis phase. Pending results from these trials, no further trials should be initiated on this topic. The analysis of subgroups may help to identify women who may benefit from the intervention (e.g. women with a diet deficient in antioxidants).

Sources of support: None

Acknowledgement: None

References


This document should be cited as: Boulvain M. Antioxidants for preventing pre-eclampsia: RHL commentary (last revised: 30 July 2008). The WHO Reproductive Health Library; Geneva: World Health Organization.

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