Evidence Update

Sickle Cell Disease Series

Do drugs that aim to reduce the dehydration of red blood cells prevent crises in people with sickle cell disease?

Zinc sulfate appears promising for preventing sickle cell crises, but there is not enough evidence to recommend its use.

Inclusion criteria

Studies:

Randomized and quasi-randomized controlled trials.

Participants:

People of any age with sickle cell disease.

Intervention:

Intervention: any drug designed to reduce dehydration of red blood cells to prevent the blockage of blood vessels in sickle cell disease.

Control: placebo or usual care.

Outcomes:

Primary: death, sickle cell pain crisis, other serious complications of sickle cell disease.

Adverse events: any adverse events or drug toxicities.

Results

- One trial, involving 145 participants, met the inclusion criteria. The trial assessed zinc sulfate against a placebo, in participants aged 12 to 27 years in India. Allocation concealment was not reported.
- No deaths were reported in either group of the included trial.
- The number of sickle cell pain crises appeared to be lower in the group taking zinc sulfate (mean 1.40 compared with 3.38), but the review authors did not have access to sufficient data to calculate whether the difference was significant.
- The total number of other serious sickle-related complications was significantly lower in the zinc sulfate group compared with placebo (weighted mean difference -2.83, 95% confidence interval -3.51 to -2.15).
- Zinc sulfate was reported to be well tolerated with no significant toxicity throughout the study.

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Adapted from from Singh PC, Ballas SK. Drugs for preventing red blood cell dehydration in people with sickle cell disease. *Cochrane Database of Systematic Reviews* 2007, Issue 4. Art. No.: CD003426. DOI: 10.1002/14651858.CD003426.pub2. *Evidence Update* published in March 2008.

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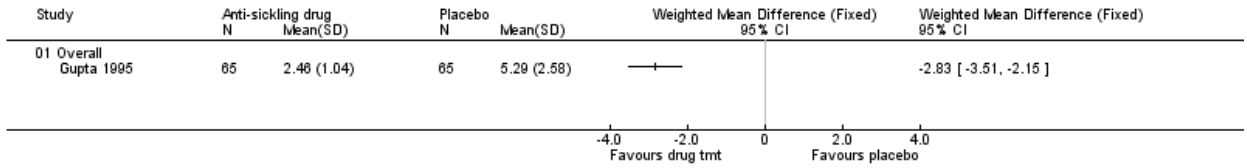
Zinc sulfate vs placebo: number of other serious sickle-related complications



Authors' conclusions

Implications for practice:

Based on the results of one small trial, zinc sulfate appears promising for reducing the number of pain crises and other complications of sickle cell disease.

Implications for research:

Further, large multicentre trials are needed to assess the use of zinc sulfate to prevent sickle cell crises, and to assess other drugs designed to reduce the dehydration of red blood cells.