Prophylactic use of granulocyte colony-stimulating factor after chemotherapy does not affect survival rate in acute myeloid leukemia: a meta-analysis


CRD summary
Prophylactic use of G-CSF after chemotherapy did not affect survival rates positively or negatively in acute myeloid leukemia patients, but could be recommended to reduce length of hospital stay. Poorly reported methodological details cast doubt on the reliability of the conclusions and the recommendations did not clearly follow from data presented.

Authors’ objectives
To evaluate the prophylactic effect of granulocyte colony-stimulating factor (G-CSF) in survival for patients with acute myeloid leukemia (AML).

Searching
MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL), The Cochrane Library and Science Citation Index databases were searched to December 2008. Reference lists were checked. Search terms were not reported.

Study selection
Randomised controlled trials (RCTs) that compared GCS-F with placebo or no treatment following chemotherapy in acute myeloid leukemia patients and that reported overall survival rates were eligible for inclusion.

Included studies used placebo control arms or no treatment. Most trials included only patients with de novo (over again, anew) acute myeloid leukemia; two studies also included secondary acute myeloid leukemia. Median age across the studies ranged from 43 to 71 years. Studies were published between 1995 and 2005 and used either lenograstim or filgrastim. Induction chemotherapy regimens varied between studies. Dosage ranged from 5μg/kg/day to 400μg/kg/day.

The authors did not report how many reviewers performed study selection.

Assessment of study quality
The authors did not report how many reviewers performed the validity assessment. Reference was made to an 11-point scale from the Cochrane Back Group, but no further details were reported.

Data extraction
Survival outcome data were extracted and used to calculate time-to-event hazard ratio (HR) and corresponding 95% confidence intervals (CI). The authors did not report how many reviewers performed data extraction. Authors were contacted for further information where relevant.

Methods of synthesis
A random-effects model was used to pool data from the primary studies and calculate pooled hazard ratio and 95% confidence intervals for overall survival. Subgroup analysis was planned for GCS-F type. Q statistics were used to assess heterogeneity.

Results of the review
Seven RCTs were included for meta-analysis (n=1,733). No details from the quality assessment were reported. Funnel plots were not used to assess publication bias due to the small number of studies.

Prophylactic use of G-CSF after chemotherapy did not increase overall survival rates significantly in acute myeloid leukemia patients (HR 0.95, 95% CI 0.85 to 1.07). No significant heterogeneity was found.
No significant differences were found between G-CSF type, or by excluding studies with less than 100 patients.

**Authors’ conclusions**
Prophylactic use of granulocyte colony-stimulating factor after chemotherapy did not affect survival rates positively or negatively in acute myeloid leukemia patients, but could be recommended to reduce hospital stay in accordance with guidelines from British Society of Haematology.

**CRD commentary**
This review addressed a clear clinical question with appropriate inclusion criteria. Relevant databases were searched; these included a source of grey literature. No mention was made of publication or language restrictions and it was unclear whether these were applied. No details were reported on how many reviewers performed study selection, data extraction and quality assessment, which made it difficult to rule out reviewer error/bias. Quality assessment was reported as being carried out, but no details were reported; validity and reliable of the primary data was was unclear. The analysis appeared appropriate and the authors recognised the limitations of the few studies available. Poorly reported methodological details cast doubt on the reliability of the conclusions and the recommendations did not clearly follow from data presented.

**Implications of the review for practice and research**

**Practice:** The authors recommended that G-CSF, if appropriate, should be recommended after chemotherapy or antibiotic use to reduce length of hospital stay in accordance with guidelines of British Society of Hematology.

**Research:** The authors did not state any recommendations for research.

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