Clinical and economic comparison of lenograstim-primed blood cells (BC) and bone marrow (BM) allogeneic transplantation


Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Using blood cells (BC) allogeneic transplantation in patients suffering from acute leukemia or chronic myeloid leukemia (CML) in CR1 or PR1.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients suffering from acute leukemia or chronic myeloid leukemia (CML) in CR1 or PR1.

Setting
Hospital. The economic study was carried out in Marseille, France.

Dates to which data relate
The effectiveness and resource use data related to BC transplantation were collected between April 1995 to June 1997. The corresponding data for BM transplantation were gathered between March 1994 and June 1997. The fiscal year was 1996.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was retrospectively performed on the same patient sample as that used in the effectiveness analysis.

Study sample
Power calculations were not used to determine the sample size. Each group consisted of 17 patients. The median age of patients in the BC group was 38 (range: 22 - 50) years versus 32 (range: 17 - 45) years in the BM group.

Study design
This was a retrospective non-randomised trial with historical controls, carried out in a single centre. Follow-up was until 100 days after transplantation and no loss to follow-up was reported.
Analysis of effectiveness
Patients were analysed in the group to which they were initially allocated (intention to treat analysis). The health outcome measures were the median number of days during which the patients had neutrophil engraftment, day platelets >25x10^9/L (based on Kaplan-Meier estimation and independent of platelet transfusion), acute graft-versus-host disease (GVHD) great or equal to grade 2, infectious events including number of days of fever and number of days of IV ATB. The patients in the BC group were matched with the patients in the BM group in terms of the main criteria of diagnosis, disease phase at transplant, methotrexate including GVHD prophylaxis and age.

Effectiveness results
The results for the BC and BM groups were:

median number of days during which the patients had neutrophil engraftment, 14 days and 19 days, (p<0.05);

Day platelets >25x10^9/L, 15 (9-74) versus 25 (15-45) days, (p<0.05);

Acute GVHD greater or equal to grade 2, 8/17 versus 10/17, (NS);

Number of days of fever, 4 (1-14) versus 7 (2-45), (NS);

Number of days of IV ATB, 15 (8-50) versus 16 (6-80), (NS).

Clinical conclusions
In this study, a significant difference appeared between the two groups for neutrophil and platelet recovery in favour of the BC group.

Measure of benefits used in the economic analysis
No summary benefit measure was identified in the economic study, and only separate clinical outcomes were reported.

Direct costs
Costs were not discounted due to the 1 year study period. Resource utilisation was not reported separately from the costs. The cost items were reported separately. The cost analysis covered the costs of hospitalisation (collection, conditioning regimen, drugs, room cost, laboratory cost, transfusions, parenteral alimentation, and post graft G-CSF), and follow-up costs (outpatient clinic, readmission, and transfusion). The cost analysis was performed from the perspective of a health care system. The source of resource use was the patients' medical records. 1996 prices were used.

Statistical analysis of costs
Statistical analysis was performed to compare the groups in terms of costs.

Indirect Costs
Not considered.

Currency
US dollars ($).

Sensitivity analysis
One-way sensitivity analyses were conducted to evaluate the effects of change in the room costs and outpatient clinic
visits.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The mean total cost in the BC group was $40,123 versus $56,257 in the BM group, (p=0.006)

Synthesis of costs and benefits
A synthesis was not carried out since the use of BM was regarded as the dominant strategy.

Authors’ conclusions
The authors’ comparison suggested that platelet reconstruction and total costs were in favour of the BC group.

CRD COMMENTARY - Selection of comparators
A justification was given for the choice of the comparator (BM transplantation). You, as a database user, should consider whether this is a widely used health technology in your own setting.

Validity of estimate of measure of benefit
The internal validity of the estimates of effectiveness may be weakened by the lack of randomisation. Since the study did not identify a summary benefit measure it can be classified as a cost-consequences study.

Validity of estimate of costs
Quantities were not reported separately from the costs, although adequate details of methods of cost estimation were given. The cost analysis was carried out retrospectively.

Other issues
A more reliable assessment of the relative benefits would come from a randomised controlled trial. As the authors acknowledged, costs to others in society such as patients could have been included in the analysis. The authors addressed the issue of generalisability to other settings.

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