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Summary

NEW INSIGHTS INTO THE MECHANISM OF ACTION OF GRANULOCYTE-MONOCYTE APHERESIS REVEALED BY SINGLE-CELL TRANSCRIPTOMIC ANALYSIS

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Single-cell RNA sequencing of two ulcerative colitis patients reveals that granulocyte–monocyte apheresis reduces natural killer cells and monocytes and induces gene expression changes across multiple immune cell types.

KEY POINTS

- Granulocyte–monocyte apheresis is a non-pharmacological therapy approved for ulcerative colitis, mainly in steroid-dependent cases, that removes activated leukocytes but whose exact immunological changes have not been fully described.
- Analysis of peripheral blood mononuclear cells from two UC patients (mean age 59 years, both E2) before and one month after their first GMA session showed reductions in natural killer cells and monocytes after treatment.
- Differential gene expression analysis identified 86 significant genes across six cell types, with 63% downregulated after GMA treatment.
- After treatment, double-negative T-cells showed upregulation of NEFL (associated with MAPK cascade) and downregulation of genes related to immune response and signalling pathways, while CD14 monocytes showed downregulation of LINC02315, IGHEP1, and IGHE genes.
- The authors conclude that GMA induces modifications in gene expression profiles across different cell types that change the immunological environment of UC patients.

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