True Neoplastic Cells in Giant Cell Tumor of Bone are Osteoblast Lineage Cells

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Summary
- Giant cell tumor of bone (GCTB) was originally proposed as an osteoclastic tumor.
- By studying denosumab (monoclonal antibody against RANKL)-treated GCTBs, we clarified that the true neoplastic cells are osteoblast lineage cells.
- Osteoclastic cells are merely recruited by RANKL signals from the tumor cells.
- Our results show the true therapeutic target (G34W osteoblastic cells) in GCTB.

INTRODUCTION & AIM
Dynamic changes by Denosumab

RESULTS (1)
- NFATc1+ cells completely disappeared.
- RUNX2+ cells and G34W+ cells were constantly observed in the same manners.
- H3F3A G34W mutation was constantly observed.

RESULTS (2)
G34W+ cells constantly co-expressed RUNX2, and created woven bone after denosumab therapy.

DISCUSSION & CONCLUSION
- True tumor cells are osteoblast lineage cells.
- The tumor cells and osteoclastic cells interact and make osteolytic/osteogenic lesion as a whole.
- Denosumab suppresses osteolytic activities, but it might effect as a symptomatic therapy.