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Immunotherapy based on dendritic cells is feasible for patients with malignant bone and soft tissue tumours

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Background
Dentritic cells (DCs) are the most potent antigen-presenting cells of the immune system. They play an important role in the induction of a tumour-specific immune response and they may represent a promising tool in therapeutic vaccination against cancer. DCs immunotherapy was reported in some carcinomas, such as B-cell lymphoma, melanoma, prostate cancer, renal cell carcinoma and malignant glioma. But there are a few reports of DCs immunotherapy for malignant bone and soft tissues tumour in orthopaedics. To evaluate the safety and feasibility of autologous tumour lysate-dendritic cell (DCs) immunotherapy for patients with malignant bone and soft tissue tumours who failed other standard treatments.
Methods
Twenty-five patients were enrolled and immunized with DCs. Patient tumours comprised seventeen bone tumours (osteosarcoma [10], chondrosarcoma [2], fibrosarcoma [1], angiosaroma [1], metastatic bone tumour [3]) and eight soft tissue tumours (clear cell sarcoma [3], leiomyosarcoma [2], ependymoma [1], alveolar soft part sarcoma [1], MPNST[1]). Autologous DCs were generated ex vivo in the presence of granulocyte-macrophage colony-stimulating factor and interleukin-4. Solutions containing equal quantities of DCs pulsed with original tumour lysate (TL) and DCs pulsed with OK-432 were injected intradermally. Each patient received 2-5 x 106 cells one time a week for 6 weeks.
Results
Immunizations were well tolerated by patients with only local redness and swelling at the injection site in four cases. Levels of interferon-gamma and interleukin-12 cytokines were increased after DC immunotherapy in seventeen patients, nine of whom subsequently developed delayed-type hypersensitivity against the tumour lysate or OK-432. At the final follow-up, four patients had stable disease and nineteen patients had progressive disease.
Conclusions
Although improvement of clinical efficacy requires further research, toxicity-free immunization by tumour lysate- or OK-432-pulsed DCs is safe and feasible in patients with malignant bone and soft tissue tumours who failed standard therapy.

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