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New Treatment Options for Bone and Soft Tissue Tumor

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Chemotherapy, surgical excision with a safe margin, and radiation are all used to treat bone and soft tissue sarcomas. Although good results have been recorded in individuals with non-metastatic sarcomas, the results in patients with metastatic or recurring sarcomas are still poor. New therapies or changes of conventional treatments are needed to combat metastatic or recurring sarcomas. Recent research and reviews on therapeutic targets, anticancer drugs, immunotherapy, and care in patients with bone and soft tissue sarcomas were featured in this special issue. Several studies and reviews of aberrant gene expression in bone and soft tissue sarcomas were featured in this special issue. Simpson et al. found 1281 substantially differently expressed genes (839 lower and 442 higher gene expression) when they compared gene expression in canine osteosarcomas and non-tumor tissue, with qRT-PCR and immunohistochemistry confirming a selection of them. Greither et al. also looked at the impact of miR-155-5p and miR-203a-3p expression on prognosis in soft tissue sarcoma patients. Higher miR-155-5p expression was related with increased tumour stage in this study, while high miR-155-5p expression and low miR-203a-3p expression were both associated with poor survival in patients with soft tissue sarcomas. Furthermore, Fellenberg et al. highlighted the relevance of microRNAs as an osteosarcoma treatment target. In this work, miR-127-3p and miR-376a-3p silencing was discovered in osteosarcoma cell lines and tissues, and transfection with miR-127-3p and miR-376a-3p mimics substantially reduced osteosarcoma cell growth and colony formation. Compared to wildtype cells, cells transfected with miR-127-3p and miR-376a-3p demonstrated a substantial reduction in tumour volume. These findings imply that these miRNAs might be used as potential targets for the development of novel osteosarcoma therapies. Czarnecka et alreviews.'s have covered gene mutations, molecular biology, therapeutic targets, and current clinical trials in osteosarcoma and epithelioid sarcoma in depth. These sarcomas are recognised for having a high risk of metastasis and recurrence, and patients with metastatic lesions have poor clinical outcomes. The Hippo/YAP signalling system is implicated in physiological processes and diseases such as tissue regeneration, immunity, stem cell differentiation, and cancers, among other signalling pathways linked to tumour growth. In their review paper, Morice et al. addressed the Hippo pathway's links to the development of juvenile sarcomas. The mechanisms of the Hippo/YAP signalling pathway's connection with tumour proliferation, angiogenesis, epithelial-to-mesenchymal transition, migration, and invasion were explored in their review. Several drugs that target the Hippo/YAP pathway have also been launched. However, more research into the mechanism and therapeutic targets of the Hippo/YAP pathway in sarcoma cells is needed to determine its utility as a therapeutic target in sarcoma patients.

Autophagy, which permits cellular components to be degraded and recycled, is increased in certain cancer stem cells. In osteosarcoma, Camuzard et al. looked at the connection between cancer stem cells (CSCs) and autophagy. Autophagy is more efficient in osteosarcoma CSC-enriched populations than in parental cell lines, according to the researchers. Their findings indicated that autophagy is a critical mechanism for CSC survival in osteosarcoma. Despite the fact that the number of possible neoadjuvant methods is constantly increasing, deciding on the best treatment for sarcoma is difficult. Ando et al. evaluated the efficacy of rapamycin and gemcitabine combined therapy to rapamycin and gemcitabine monotherapy. In both in vitro and in vivo trials, combination therapy with rapamycin and gemcitabine was more successful than treatment with a single drug.