EXPLORING THE ROLE OF B2-ADRENERGIC SIGNALING PATHWAY IN BREAST CANCER BONE METASTASIS

Introduction and Aim

Bone metastasis occurs in 60 to 75% of the advanced breast cancer (BC) cases, being the major frequent sites of metastasis in this disease. [1,2,3]. Once BC cells engraft in bone, they interact with resident bone cells promoting a cycle of bone destruction and tumor growth, called “metastatic vicious cycle” [4]. Patients with this disease are at higher risk of feeling emotional stressed. The sympathetic nervous system hyperactivation has shown to potentiate bone destruction leading to an extensive bone degradation and to modulate BC progression via β2-adrenergic receptor (ADR) signaling pathway [5]. Our main goal is to dissect how the β2-ADR signaling pathway modulates the bone metastatic niche in BC.

Preliminary Results

The preliminary results of the co-culture TRAcP activity and bone resorption show no significant differences between the TRAcP activity and osteoclast resorption when treated with β2-adrenergic receptor agonist (ISO) and the control group.

Methodology

Human Osteoclast Isolation and Differentiation

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<th>Day 0</th>
<th>Day 1</th>
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<td>β2-ADR agonist and antagonist direct and indirect effect on UAMS</td>
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Co-culture of human osteoclasts and osteoblasts with Bo-1833 secretome on bone slices

Conclusions and Future Perspectives

- For bone resorption, even though there is an increased in ISO condition, it is not statistically significant.
- In luciferase detection however, no statistically significant results were found.
- In the future we plan to increase the number of samples for both experiments.
- We intend to address the expression profile of the sympathetic nerve fibers and the adrenergic receptors in human bone biopsies and correlate with primary breast cancer biopsies.

References


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