

Thoraco-Abdominal Pump Technique Does Not Enhance Primary Tumor Growth and Lung Metastasis in a Murine Model of Osteosarcoma.

Valérie Trichet^{1,2}, Briec Quéran^{1,2,3}, Marie-Alice Hilleriteau^{1,2,3}, Séverine Battaglia^{1,2}, Jérôme Amiaud^{1,2}, Dominique Heymann^{1,2}, Lisa Hodge⁴, Stéphane Niel³, Olivier Merdy³.

1. UMR 957, Equipe Labellisée LIGUE 2012, INSERM, Nantes, France

2. Laboratoire de Physiopathologie de la Résorption Osseuse et Thérapie des Tumeurs Osseuses Primitives, Université de Nantes, Nantes Atlantique Universités, Rue Gaston Veil 44035 Nantes, France. E-mail : valerie.trichet@univ-nantes.fr.

3. Laboratoire de Recherche Ostéopathique, Institut des Hautes Etudes Ostéopathiques de Nantes, Rue du Commandant Charcot, 44700 Orvault, France. Phone : +33228074848. E-mail : bqueran@idheo.com; omerdy@idheo.com

4. Department of Cell Biology and Immunology and the Osteopathic Research Center, University of North Texas Health Science Center, Fort Worth, Texas, United States of America. E-mail : lisa.hodge@unthsc.edu

BACKGROUND: Manual medicine therapists fear that manual medicine techniques such as lymphatic pump techniques may have pro-metastatic effects on patients with tumor disease. However, restriction of their use may suppress the potential benefits of lymphatic pumps such as reducing edema, enhancing immune surveillance and antigen delivery and promoting the infiltration of lymphocytes into tumors. The objective of this study was to determine if a thoraco-abdominal pump technique (TAPT) would increase primary tumor growth and pulmonary metastasis in a syngeneic mouse model of osteosarcoma.

METHODS: In two independent studies, we investigated the effects of a 10-day period of a daily TAPT on osteosarcoma-bearing C57BL/6J mice compared to a control group. TAPT was initiated at day 16 post-injection of MOS-J cells in contact to the tibia and performed under anesthesia. The control group was anesthetized but untreated. We assessed primary tumor volume, mean number of tumor nodules in the lung and the concentration of leukocytes in the blood, lungs and bone marrow near the primary tumor. The animal-experimentation protocol was approved by the local Ethics Committee (CEEA n°6, Pays de la Loire) and the French Ministry of Higher Education and Research under the n°1080.01.

RESULTS: Results showed that TAPT did not alter tumor growth or lung metastasis compared to control mice. Additionally, we did not observe any change in leukocyte numbers (including T lymphocytes, monocytes/macrophages) within blood on the last day of the TAPT period or within the bone marrow near the tumor or within tumor-nodules in lung 20 days after the TAPT period.

CONCLUSIONS: In this osteosarcoma pre-clinical model, TAPT did not enhance metastasis, suggesting that it might be safe to use during osteosarcoma. However it did not enhance tumor regression or promote anti-tumor immune responses, which may limit clinical benefits outside of the usual range of indications.

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