

Feasibility of an acute physical exercise before immunotherapy and chemotherapy infusion for metastatic non-small-cell lung cancer patients: ERICA study

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Background: Because of metastatic Non-Small Cell Lung Cancer (mNSCLC) and its treatment, patients suffer from numerous symptoms such as dyspnea, muscle atrophy, pain, fatigue, loss of appetite, altered physical condition and lung function, which may further impair the patient's overall condition. Nevertheless, it has been suggested that physical exercise could improve response to treatment at the clinical level due to its known effects on the immune system. Moreover, preclinical studies have shown that exercise performed during chemotherapy administration could result in physiological benefits such as improved intra-tumoral infusion and drug delivery. The ERICA study aims to assess the feasibility of an acute physical exercise immediately before immunotherapy and chemotherapy administration in patients with mNSCLC.

Methods/Design: ERICA is a randomized controlled, single-center feasibility study conducted at the Centre Léon Bérard (CLB). 30 patients with mNSCLC will be randomized (2:1 ratio) in one of two groups : "exercise" or "control". Participants in both groups will receive Physical Activity (PA) and nutrition recommendations at baseline (attention baseline ça veut dire point de comparaison !! Pas "origine" ou "depart") and two nutritional assessments, at baseline (attention tu te répète avec baseline) and during the last treatment course. In the exercise group, participants will receive a 3-months program consisting in an acute physical exercise prior to immunotherapy and chemotherapy administration, and a home walking program using an activity tracker. The acute exercise will be intermittent, at submaximal intensity and performed on a cyclo-ergometer for 35 minutes. Clinical, physical, biological and psychosocial parameters will take place at baseline, M3 and M6.

Discussion : ERICA is the first study to test an acute physical exercise prior immunotherapy and chemotherapy in patients with mNSCLC. This study will provide new insights about the integration of reference exercise protocols in cancer treatment, and interaction of physical exercise with chemotherapy and immunotherapy.

Keywords : Non-small-cell lung cancer, Metastatic, Exercise, Immunotherapy, Chemotherapy, Immunology