# The importance of skeletal muscle mass in advanced cutaneous melanoma patients treated with immunotherapy

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## Background and aims
Many studies highlighted that abnormal body composition has a negative prognostic role on clinical outcomes but the effect of sarcopenia is still little explored in the immunotherapy era. We investigated the association between low skeletal muscle mass and response rate in melanoma patients undergoing immunotherapy.

## Methods
We prospectively enrolled 23 patients with advanced cutaneous melanoma candidate to first-line immunotherapy. Before treatment, we assessed nutritional status by anthropometry and presence of sarcopenia. Skeletal muscle index (SMI) was defined from analysis of CT images; the cut-offs use to identify sarcopenia are SMI<38.5-52.4 $cm^2/m^2$ for female-male respectively. Data are given as mean (SD); statistical analysis was performed by Fisher's Test.

## Results
Twenty-three patients were evaluated: 16M/7F; mean age 63(9) years; mean BMI was 26.4(4.7) $kg/m^2$. According to selected criteria, 9 patients (39%) were non-sarcopenic, with a mean BMI of 28.7(4.5) and all of them were associated with positive respond rate (p-value 0.0072). 14 patients (61%) were sarcopenic with a mean BMI of 25(4.4); of those, 43% were responder with a BMI 27.6(5.4); and 57% were non-responder and with a BMI 22.9(2.1).

## Conclusions
Our data showed that it is mandatory to investigate the presence of sarcopenia which is often hidden by BMI. More than half patients presented an unfavourable body composition conditioning a poor response rate. Instead, non-sarcopenic patients were associated with better clinical outcomes. Further studies are required to deepen the role of sarcopenia on prognosis of melanoma patients undergoing immunotherapy in order to identify a tailored nutrition intervention focused on his resolution regardless of BMI.