Aim: The WHO Performance Status (PS) of cancer patients (pts) correlates with survival and with anticancer treatments tolerability. However, PS is subject to inter-observer variability and is not sensitive to detect pts with high-risk of treatment toxicity. We studied the relationship between Rest Metabolic Rate (RMR) and PS.

Methods: A prospective observational, monocentric study was conducted. Before treatment initiation, RMR was measured using indirect calorimetry (Fitmate®, Cosmed) and compared to estimated RMR obtained by the modified Harris and Benedict equation. Hypermetabolics (Hm) pts were defined as having measured RMR ≥110% of calculated RMR and Not Hypermetabolics (NoHm) pts <110%. We recorded (PS), weight loss, α1 glycoprotein acid (α1 GP)(1), CRP(2), ferritin, albumin(3), transthyretin(4), Nutritional and Inflammatory Status (NIS)=(1X2)/(3X4), daily caloric intakes (dci) and energetic gap. Comparisons between Hm and NoHm pts used t-test and chi2 test.

Results: A total of 161 consecutive pts were analyzed: 58% males, median age : 64 years (20-94). Primary tumor: genito-urinary (23%) gastro-intestinal (20%), lung (17%); 10% were PS ≥3; median weight loss : 4.1% (-14.9 – +18.5); mean energetic gap: +80 kcal/d; mean RMR : 1676 kcal/d; 60% of the pts were Hm with mean RMR= 1815 kcal/d vs 1433 kcal/d in NoHm pts (P<0.01). The percent of Hm pts increased with PS deterioration: 45% in PS1, 65% in PS2 and 85% in PS3-4 pts (p = 0.05). Hm pts had increased weight loss: weight loss of 6% vs 3% (t=3.47, p < 0.01); weight loss>5% in 52% vs 32% of the pts (p = 0.03). Hm pts had more inflammation: α1-GP 1.5 vs 1.1 g/L (t=3.41, p < 0.01); CRP 30 vs 17 mg/L (t=2.42,p = 0.03); ferritin 406 vs 245 µg/L (p < 0.01), NIS 14 vs 2.82 (t=2.19, p = 0.03). Mean energetic gap was -189 kcal/d in Hm vs +268 kcal/d in NoHm pts (t=4.4, p < 0.01) while dci were equivalent: 1650 kcal/d for Hm and 1689 kcal/d for NoHm pts (p = 0.69).

Conclusions: Hypermetabolism may account for cancer-induced asthenia and development of cachexia. The measurement of RMR allows to detect pts at high-risk of malnutrition amongst pts with PS<2. An ongoing prospective study will analyze the outcome of these pts.

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