

## AB073. 54. Serial cell free DNA (cfDNA) monitoring in melanoma patients correlates with tumour burden and therapeutic response as assessed by CT scan

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**Background:** The assessment of tumour burden and therapeutic response in melanoma patients is currently undertaken by way of serial lactate dehydrogenase (LDH) level measurements and radiological imaging by CT or PET scan. While both assessment strategies are frequently successful at monitoring disease burden and treatment response, the problem of pseudoprogression increasingly render these methods crude measures of underlying disease status in affected patients. In these contexts, complementary strategies are needed to assess alterations at the molecular

level, and to detect the event of genomic evolution as it relates to therapeutic resistance. Cell free DNA (cfDNA) has emerged as an easily accessible biomarker to assess tumour burden and therapeutic response in several malignancies including melanoma.

**Methods:** We extracted and quantified plasma derived cfDNA from twelve patients with melanoma. Five patients had stage I disease and seven patients had stage IV disease.

**Results:** Patients with stage IV disease had significantly higher plasma cfDNA levels than patients with stage I melanoma ( $4,464 \pm 461.1$  vs.  $2,750 \pm 250.0$   $P < 0.0158$ ). Positive correlation was found between tumour burden and cfDNA levels in stage IV melanoma patients receiving immunotherapy at baseline ( $N=7$ ) ( $r=0.8489$ ,  $P=0.0157$ ), and at follow up ( $N=5$ ) ( $r=0.9704$ ,  $P=0.0061$ ) assessment. We found positive correlation between variations (the ratio between values at re-assessment for therapeutic response and baseline) of cfDNA levels and tumour burden in stage IV melanoma patients ( $N=5$ ) ( $r=0.8918$ ,  $P=0.0420$ ).

**Conclusions:** We postulate that a quantitative measure of cfDNA may complement current methods of assessing tumour burden and therapeutic response in stage IV melanoma patients undergoing immunotherapy.

**Keywords:** Cell free DNA (cfDNA); melanoma; liquid biopsy

doi: 10.21037/map.2019.AB073

**Cite this abstract as:** Ita M, Wang JH, Toulouse A, Heffron C, Power D, Redmond HP. Serial cell free DNA (cfDNA) monitoring in melanoma patients correlates with tumour burden and therapeutic response as assessed by CT scan. *Mesentery Peritoneum* 2019;3:AB073.