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Genes associated with metabolic syndrome predict disease-free survival in stage II colorectal cancer patients. A novel link between metabolic dysregulation and colorectal cancer

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ABSTRACT

Studies have recently suggested that metabolic syndrome and its components increase the risk of colorectal cancer. Both diseases are increasing in most countries, and the genetic association between them has not been fully elucidated. The objective of this study was to assess the association between genetic risk factors of metabolic syndrome or related conditions (obesity, hyperlipidaemia, diabetes mellitus type 2) and clinical outcome in stage II colorectal cancer patients. Expression levels of several genes related to metabolic syndrome and associated alterations were analysed by real-time qPCR in two equivalent but independent sets of stage II colorectal cancer patients. Using logistic regression models and cross-validation analysis with all tumour samples, we developed a metabolic syndrome-related gene expression profile to predict clinical outcome in stage II colorectal cancer patients. The results showed that a gene expression profile constituted by genes previously related to metabolic syndrome was significantly associated with clinical outcome of stage II colorectal cancer patients. This metabolic profile was able to identify patients with a low risk and high risk of relapse. Its predictive value was validated using an independent set of stage II colorectal cancer patients. The identification of a set of genes related to metabolic syndrome that predict survival in intermediate-stage colorectal cancer patients allows delineation of a high-risk group that may benefit from adjuvant therapy and avoid the toxic and unnecessary chemotherapy in patients classified as low risk. Our results also confirm the linkage between

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