Aim: IL-8 is produced by multiple tumors and its functions include regulation of tumor angiogenesis and immune response. We evaluated the correlation of IL-8 with tumor burden and its potential role as a cancer biomarker by studying sequential levels of serum IL-8 in preclinical tumor models and in patients with multiple tumor types, at baseline and following anticancer treatment.

Methods: IL-8 levels were monitored sequentially by sandwich ELISAs in three different models: a) cultured tumor cells supernatant; b) serum of tumor-xenografted mice and; c) serum and urine samples from 119 cancer patients, at baseline and following diverse anticancer treatments. We correlated IL-8 levels with tumor burden, treatment induced response and cancer prognosis.

Results: IL-8 levels showed a strong correlation with tumor burden in all the models explored: a) in tumor cultures, IL-8 levels correlated accurately with the number of cancer cells; b) in tumor-xenografted mice, IL-8 serum levels correlated with tumor burden and rapidly dropped following surgical excision; and c) in patients with melanoma, renal-cell carcinoma, non-small cell lung cancer and hepatocellular carcinoma, serum IL-8 levels correlated with tumor burden and stage, survival and objective responses to therapy, including BRAF inhibitors and immunomodulatory monoclonal antibodies. IL-8 concentrations in urine were mainly elevated in tumors with direct contact with the urinary tract.

Conclusions: IL-8 levels correlate with tumor burden in preclinical models and in cancer patients and are a potentially useful biomarker to monitor response to cancer treatment. This might be particularly relevant to assess the therapeutic effects of drugs that may induce "pseudo-progressions", such as immunomodulatory monoclonal antibodies.

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