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Clinical Study

# Histologic Predictors of Renal Cell Carcinoma Response to Interleukin-2-Based Therapy

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### Abstract

The authors examined pathology from patients with renal cancer (RCC) treated with IL-2 to determine response rates for clear cell and variant RCC and to identify histologic features that predict response. Pathology specimens were reviewed by a single pathologist who was blinded to both the prior pathology interpretation and the therapeutic response. Findings were correlated with response to IL-2 therapy. Evaluable pathology specimens were obtained from 231 patients. Of 163 primary RCCs, the response rate was 21% (30/146) for patients with clear cell versus 6% (1/17) for patients with variant or indeterminate type RCC ( $P = 0.20$ ). For clear cell carcinomas, response to IL-2 was associated with the presence of alveolar features and the absence of papillary and granular features. Patients with more than 50% alveolar features and no granular or papillary features had a 39% response rate (14/36). Patients with alveolar and granular features representing less than 50% of the specimen and no papillary features had a 19% response rate (15/77). The response rate for the others was 3% (1/33). This model was then applied to an independent sample of 68 metastasis specimens. Response rates in the three prognostic groups and for patients with non-clear cell cancers were 25% (5/20), 9% (2/22), 0% (0/16), and 0% (0/10), respectively. Median survivals for all patients with clear cell tumors by risk group were 2.87, 1.36, and 0.87 years, respectively ( $P < 0.001$ ). These data suggest that patients with non-clear cell RCC or with clear cell RCC with papillary, no alveolar, and/or more than 50% granular features respond poorly to IL-2 and should be considered for alternative treatments. Investigation of other tumor-related predictors of IL-2 responsiveness is warranted.

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