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**“Sarcomatoid Carcinoma of the Prostate: A Study of 42 Cases”**

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Sarcomatoid carcinoma of the prostate is a rare type of prostatic cancer. With the exception of one study, the morphologic features and patient outcomes have been reported only in relatively small case series and individual reports. We examined transurethral resection, needle biopsy, and radical prostatectomy specimens from 42 patients with sarcomatoid carcinoma of the prostate, all of which were received in consultation. Clinical information was obtainable on 32 patients. Five patients were lost to follow-up and information could not be obtained on the 5 remaining patients.

**Prior Prostatic Adenocarcinoma:** The majority of patients (n = 21; 66%) had a prior history of acinar adenocarcinoma of the prostate. Of the 14 men with available data, reported Gleason scores were 6 (n = 7), 8 (n = 4) and 10 (n = 3). Of the remaining patients where this information was known, 11 patients presented with *de novo* sarcomatoid carcinoma. The time between the original diagnosis of acinar adenocarcinoma and diagnosis of sarcomatoid carcinoma ranged from 6 months to 16 years (mean 6.8 years).

**Concurrent Adenocarcinoma:** The majority of patients demonstrated a concurrent high grade acinar carcinoma of Gleason score 7 (n = 3), 8 (n = 9), 9 (n = 10), and 10 (n = 10). A subset of patients contained an admixed ductal adenocarcinoma (n = 4), small cell carcinoma (n = 3), squamous cell carcinoma (n = 3) or other unusual pattern of prostate carcinoma (n = 3). In 1 case, the diagnosis was based on immunohistochemical evidence of epithelial differentiation along with the history of prior adenocarcinoma.

**Morphology of the Sarcomatoid Component:** The percentage of sarcomatoid growth ranged from 5% to 99% (mean 65%). Bizarre atypia with giant cells was present in 55% of cases. Admixed heterologous elements were identified in 10 cases (29%), including osteosarcomatous (n = 7), chondrosarcomatous (n = 5), and rhabdomyosarcomatous (n = 2) elements. Of the 12 cases with received immunostains of the sarcomatoid component, 5/7 cases were at least focally positive for cytokeratin, 1/1 case was focally positive for Cam5.2, and 3/6 cases were focally positive for PSAP. The sarcomatoid component did not demonstrate immunoreactivity for PSA in 8 cases.

**Prognosis:** Approximately half of all patients developed metastatic disease either at time of presentation or subsequently. Of patients with meaningful follow-up, 6/7 died within one year of the diagnosis of sarcomatoid carcinoma; 20 were alive yet with very short follow-up (median 1 year; mean 2.3 years). Kaplan-Meier analysis revealed that the actuarial risk of death at 1 year following diagnosis of sarcomatoid carcinoma was 20%. No correlation was identified between patient survival and morphologic features, prior radiation or hormone therapy, or concurrent high grade prostate cancer. Sarcomatoid carcinoma demonstrates diverse spindle and epithelial cell morphologies. The sarcomatoid component often has heterologous elements and in one case no epithelial component was seen on H&E stained sections. The epithelial component is typically high grade acinar adenocarcinoma, yet other aggressive tumor subtypes such as ductal adenocarcinoma and small cell carcinoma may also be seen. Sarcomatoid carcinoma is an aggressive form of prostate cancer, the prognosis of which is dismal regardless of other histological or clinical findings.