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JOURNAL ARTICLE

Detection of alpha-fetoprotein mRNA in seminoma

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The classic testicular tumor marker alpha-fetoprotein (AFP) is associated with nonseminomatous germ cell tumors, including embryonal carcinoma, yolk sac tumor, and teratoma. AFP is not considered to be produced by pure seminoma. However, postmortem studies have demonstrated that 30 to 45% of patients who died of seminoma initially diagnosed harbored nonseminomatous metastases and had an elevated serum AFP. We analyzed AFP expression by immunohistochemistry and by nested reverse transcription-polymerase chain reaction (RT-PCR) in 10 seminomas, 3 embryonal carcinomas, and 1 immature teratoma, diagnosed by traditional clinical methods. Positive immunohistochemical staining was observed in all embryonal carcinomas and in the teratoma but not in the seminomas. AFP mRNA, however, was found in 6 of 10 seminomas, in all embryonal carcinomas, and in the teratoma. The nucleotide sequence of PCR products was identical with that of the AFP gene. We conclude that the analysis of AFP gene expression by nested RT-PCR would be useful for detecting minute quantities of nonseminomatous germ cell elements in classic seminoma. Moreover, the existence of AFP mRNA suggests the possibility that seminoma cells can differentiate into nonseminomatous germ cells.

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