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Letters

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Elevated Levels of p53 Protein in Adrenocortical Carcinomas from Costa Rica

A. Hildesheim, R. Herrero, J. Johnson, C. Bratti, K. Bhatia, I.T. Magrath and J.F. Fraumeni Jr

ADRENOCORTICAL CARCINOMA is a rare tumour which occurs at an annual rate of approximately 2 per million [1]. Incidence rates rise with age, and peak in the fifth to seventh decades of life, although among children tumours tend to appear before the age of 5 years [2]. Little is known about the aetiology of this tumour, but genetic factors are suggested by the occurrence of childhood adrenocortical tumours in the Li-Fraumeni cancer family syndrome, which also features early onset breast cancer, soft tissue and bone sarcomas, leukaemia, and brain tumours [3, 4]. Germline *p53* mutations have been demonstrated in this syndrome [5–7] while a survey of sporadic adrenocortical carcinomas revealed *p53* mutations in tumour samples from three (20%) of 15 adult patients examined [8].

We had the opportunity to investigate the occurrence of *p53* alterations in adrenocortical carcinomas diagnosed in Costa Rica, where the overall incidence of this disease is lower (<1 per million annually) than that in the United States, but the age distribution is skewed towards younger ages (Table 1). Cases diagnosed between 1 January 1981 and 31 December 1990 were identified through the Costa Rican population-based tumour registry. Of the 14 cases diagnosed during the study period (age range: 9 months – 64 years), tissue blocks were obtained for *p53* testing from eight individuals, including three children under the age of 5 (Table 1). Samples were tested for *p53* protein by immunohistochemistry using the peroxidase labelled avidin–biotin technique [9]. Monoclonal mouse antibody to human p53 protein (dilution 1:50) was obtained from DAKO, Carpinteria, California.

Elevated levels of p53 protein were detected in tumours from two (25%) of the eight subjects examined (Table 1). This result is consistent with the 20% prevalence of *p53* mutations among adrenocortical carcinoma cases previously reported [8]. Of possible significance is the observation that the tumours with elevated p53 levels were obtained from two of the three patients diagnosed before the age of 5 years. The assay used to assess *p53* alterations in our study is capable of detecting only those changes that result in protein stabilisation leading to elevated tissue protein levels. Since the test might miss mutations that do not result in elevated p53 protein levels, the overall prevalence of *p53* alterations could be higher than reported here.

Our findings, along with previous reports [6, 8], suggest that adrenocortical carcinomas in children tend to display *p53* mutations, while the adult neoplasms usually do not. The results are based on limited numbers and should prompt a larger survey of childhood and adult adrenocortical tumours for somatic and germline *p53* mutations.

Table 1. Adrenocortical carcinoma cases diagnosed in Costa Rica between 2 January 1981 and 31 December 1990

	Age	Gender	*p53* Status
1	9 mo	F	Negative
2	1	M	Positive
3	3	F	Positive
4	4	F	NT
5	7	F	NT
6	10	F	Negative
7	14	F	Negative
8	14	F	NT
9	27	M	NT
10	31	F	NT
11	41	F	NT
12	42	M	Negative
13	46	F	Negative
14	64	F	Negative

NT, Not tested.

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Correspondence to A. Hildesheim.
A. Hildesheim and J.F. Fraumeni Jr are at the Epidemiology and Biostatistics Program Division of Cancer Etiology, National Cancer Institute, Bethesda, Maryland; J. Johnson, K. Bhatia and I.T. Magrath are at the Pediatric Branch in the Division of Cancer Treatment, National Cancer Institute, Bethesda, Maryland 20892, U.S.A.; and R. Herrero and C. Bratti are at the National Tumour Registry, San Jose, Costa Rica.
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