

Letter to the Editor

Carcinoembryonic Antigen Levels in Asymptomatic Adolescents

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A RECENT article by Thomson *et al.* [1] reported that a new human colon tumour antigen and carcinoembryonic antigen (CEA) are distinct and separate antigens. It has been known for several years that CEA may be present in elevated concentration in the plasma of adults with colonic cancer, other tumors, non-malignant diseases of the gastrointestinal tract and liver, and in some apparently healthy tobacco smokers [2]. Studies to determine CEA levels in apparently healthy children and adolescents have not previously been reported, although elevated CEA levels have been reported in four of 26 children with severe but non-malignant disorders [3]. Before tests for such tumor-specific antigens can be applied experimentally to pediatric populations, it is necessary to determine the normal range of values in children and adolescents.

In order to determine normal values for CEA in adolescents, plasma samples from 91

asymptomatic adolescents were tested for CEA. The adolescents were between 12 and 20 years of age: 39 male, 52 female; 19 white, 72 non-white. All were residents of the District of Columbia, U.S.A., with a variety of socioeconomic backgrounds. None had histories of tumours or liver disease. Plasma samples in ethylenediaminetetraacetic acid (EDTA) were drawn and tested under code in triplicate for CEA by radioimmunoassay (RIA) (CEA-Roche, Hoffman-La Roche Inc., Nutley, NJ) [4].

CEA levels ranged from 0 to 9.33 ng/ml (mean 1.52 ± 1.60 S.D.), with one exceptional value of 45.6 ng/ml (not included in calculation of the mean). Mean values for different groups are shown in Table 1. CEA levels greater than the 95% confidence limits (>4.7 ng/ml) were detected in five adolescents, with values of 9.3, 5.2, 6.9, 45.6 and 5.2 ng/ml, who could not be distinguished by race, sex, socioeconomic status, or history of

Table 1. Mean carcinoembryonic antigen (CEA) levels in adolescents in relation to sex and race

	Observed CEA (ng/ml)							
	No.	0-2.5 Mean (\pm S.D.)	No.	2.6-5.0 Mean (\pm S.D.)	No.	5.1-10.0 Mean (\pm S.D.)	No.	≥ 10.1 Mean (\pm S.D.)
Black female	40	0.93 (0.81)	3	3.82 (0.37)	1	6.87	0	
White female	7	0.52 (0.55)	0		0		0	
Black male	19	1.21 (0.83)	6	3.52 (0.46)	2	5.18 (0)	0	
White male	8	1.10 (0.69)	1	2.62	1	9.33	1	45.56
Oriental female	1	1.32	0		0		0	
Hispanic male	1	1.11	0		0		0	

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surgery. None had had prior transfusions. Only one of these five had a chronic disease (asthma) and was taking medications for it; four other adolescents with asthma in this study had CEA levels <4.7 ng/ml. None gave a history of illicit parenteral drug use. Tobacco smoking histories were documented in two of five with elevated levels. Twenty-two other adolescents had histories of tobacco

smoking, with CEA levels <4.7 ng/ml (<2.5 ng/ml in 18).

A range of normal values for CEA in asymptomatic adolescents was determined to be 0–4.7 ng/ml, based on 95% confidence limits. In this small study, increased CEA levels were not associated with conditions known to be associated with elevated CEA levels in adults.

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