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Specificity of Tumour Marker Antigens in Benign Respiratory Diseases

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THE SPECIFICITY of tumour markers in cancer is poor. Among benign affections, respiratory diseases are very frequent in clinical practice. Therefore, a transverse study was carried out on 58 patients of a pneumonology department (39 tuberculosis cases and 19 various respiratory diseases among which asthma, bronchitis, lung infection, pleuresia, pneumothorax, respiratory insufficiency). Venous blood samples (without anticoagulant) were drawn without haemolysis and serum aliquots were kept at −20°C until assayed. Commercial kits based upon enzyme immunoassay (EIA) or immunoradiometric assay (IRMA) were used for the determination of the following tumour markers: CEA and CA-125 (Abbott, EIA), CA-19.9 and CA-15.3 (CIS Biointernational, IRMA), CA-50 (Behring, IRMA), SCC (Abbott, IRMA) and NSE (Pharmacia, IRMA). The assays were performed in the same series in order to avoid interassay variations.

Since no major difference could be observed between data from the patients with tuberculosis and from those with other respiratory diseases, they were pooled into a single group (Table 1). As a rule the mean concentrations were below the commonly admitted cut-off values but the percentages of patients with abnormally high serum levels ranged from 10 to 26% according to the tumour marker antigen. This is fairly larger than those reported for CA-19.9 [1, 2] in respiratory diseases and for CA-50 [3] in pneumonia, but in good agreement with those reported for CA-125 [4] in respiratory diseases and for CA-15.3 [5] in miscellaneous benign diseases. We also looked for the frequency of multiple abnormally high serum concentrations. Since CA-50 could not be determined in all the samples, it was excluded from the frequency counts. When considering the whole group of 58 patients, only 18 patients (31%) presented no abnormality, 21 (36%) had one elevated concentration, 13 (22%) had two elevated concentrations and 6 (11%) had three or four abnormally high concentrations. When considering separately the benign respiratory diseases group (BRD) and the tuberculosis group (T), the distribution was as follows: no abnormal concentration, BRD = 2 (10%), T = 16 (41%); one elevated concentration, BRD = 10 (53%), T = 11 (28%); two elevated concentrations, BRD = 6 (32%), T = 7 (18%); three or four elevated concentrations, BRD = 1 (5%), T = 5 (13%).

In conclusion, one has to notice the small percentage of subjects presenting no abnormally high serum concentration of tumour marker antigen. The concurrent determination of CEA, CA-125, CA-15.3, CA-19.9, SCC and NSE showed that 30–36% of the patients had at least two abnormally high tumour marker concentrations, and thus it still presents, at least in this kind of patient, a risk of finding false positive results in the absence of any cancer. Lastly, the results here reported were obtained either with EIA or with IRMA methods; possibly different ones might have been obtained using other procedures since large discrepancies were shown in CA-125 concentrations in pregnant women [6] using the same antibody but with enzyme or radioisotope labelling.

Table 1. Tumour marker assays

	Benign respiratory diseases	No. of cases
CEA (norm <5 ng/ml)		58
Mean (S.D.)	3.4 (3.0)	
Range	0.5–16	
n (%) cases > norm	11 (19%)	
CA-125 (norm <35 U/ml)		58
Mean (S.D.)	29.2 (39.7)	
Range	10–200	
n (%) cases > norm	11 (19%)	
CA-19.9 (norm <37 U/ml)		57
Mean (S.D.)	24.5 (20.6)	
Range	4–115	
n (%) cases > norm	14 (24%)	
CA-50 (norm <25 U/ml)		49
Mean (S.D.)	21.0 (24.2)	
Range	1–100	
n (%) cases > norm	13 (26%)	
CA-15.3 (norm <25 U/ml)		57
Mean (S.D.)	24.1 (19.5)	
Range	8–151	
n (%) cases > norm	16 (28%)	
NSE (norm <12.5 μg/ml)		58
Mean (S.D.)	8.5 (5.2)	
Range	2.3–35	
n (%) cases > norm	6 (10%)	
SCC (norm <2 ng/ml)		57
Mean (S.D.)	2.8 (10.3)	
Range	1–79	
n (%) cases > norm	10 (17%)	

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