Short Communication

CHANGES IN THE SCM RESPONSE RATIO (RR_{SCM}) AFTER SURGICAL REMOVAL OF MALIGNANT TISSUE

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IN OUR recent report, we have shown that lymphocytes from patients with malignant disorders can be differentiated from those of healthy donors or donors with non-malignant disorders on the basis of changes in the structuredness of cytoplasmic matrix (SCM) induced by cancer basic protein (CaBP) and phytohaemagglutinin (PHA) (Cercek, Cercek and Franklin, 1974). Changes in the SCM are measured by means of the technique of fluorescence polarization (Cercek, Cercek and Ockey, 1973). To increase the resolution of the SCM test and to assess the general immunocompetence of the donor's lymphocytes, we have expressed the SCM response of lymphocytes to CaBP and to PHA as a single parameter, *i.e.* SCM Response Ratio (RR_{SCM}):

$$RR_{SCM} = P_{CaBP}/P_{PHA}$$

where P_{CaBP} means the degree of fluorescence polarization obtained after CaBP stimulation and P_{PHA} that after PHA stimulation, both measured at comparable times after stimulation. Details of the technique have already been described (Cercek *et al.*, 1974).

The values of RR_{SCM} of lymphocytes from patients with malignant disorders range from 0.6 to 1.0 whereas RR_{SCM} values of lymphocytes from healthy donors or donors with non-malignant disorders range from 1.2 to 1.7 (Cercek *et al.*, 1974). We have now studied changes in RR_{SCM} values after surgical removal

of malignant tissues. The RR_{SCM} values were assessed before operation, 24 h after operation and 2 weeks later. Results in Table I show that there was a progressive increase in the values of RR_{SCM} after surgery and in 5/6 of these cases reached values typical for healthy donors 2 weeks after operation.

After removal of the malignant tissue, lymphocytes first lost the ability to respond to CaBP and 2 weeks later they regained the ability to respond to PHA. The absence of the response to CaBP and PHA 24 h after surgery is not due to an effect of anaesthetics as we have found that after surgery in non-malignant disorders there was no change in the values of RR_{SCM} before and after operation. The loss of the response to CaBP in 24 h after removal of malignant tissues seems to suggest that the half-life of receptors for CaBP on lymphocytes from patients with cancer is not longer than the order of hours.

We have also studied changes in RR_{SCM} values before and after surgical removal or biopsies of histologically declared benign growths in the breast. The results in Table II show that 4/12 cases did not respond to CaBP and PHA and could on this basis be benign or pre-malignant (Cercek *et al.*, 1974). However, in 8 cases lymphocytes responded to CaBP and gave no response to PHA. The RR_{SCM} values were typical for malignant conditions. Also, their recovery pattern after operation was the same as in

TABLE I.—*Changes in RR_{SCM} after Surgical Removal of Malignant Tissues*

Site of malignancy	Donor's		24 h pre-operation	24 h post-operation	2 weeks post-operation
	Age	Sex			
Colon	72	M	0.83	1.02	1.20
Colon	77	F	0.85	1.05	1.29
Breast	73	F	0.84	0.97	1.03
Breast	37	F	0.76	1.01	1.20
Breast	54	F	0.83	1.02	1.23
Breast	51	F	0.89	0.99	1.20

TABLE II.—*Changes in RR_{SCM} after Surgical Removal of Histologically Declared Benign Growth in the Breast*

Age	Donor's		24 h pre-operation	24 h post-operation	2 weeks post-operation
	Sex				
38	F		1.01*	0.99	1.01
45	F		0.92*	0.91	1.11
31	F		0.99*	0.86	1.05
64	M		0.96*	0.84	1.22
40	F		0.78	1.02	1.19
25	F		0.84	0.97	1.19
52	F		0.81	1.01	1.15
32	F		0.78	1.10	—
45	F		0.79	0.98	1.27
43	F		0.85	0.98	1.15
45	F		0.80	1.02	1.00
54	F		0.87	0.87	0.95

* No response to CaBP.

histologically declared malignant growths. The results raise the possibility that the sensitization to CaBP indicates cases which may be committed to become histologically recognizable malignancies if the growths were left *in situ*, and only cases whose lymphocytes did not recognize CaBP may represent genuine benign growths. The fact that they also did not respond to PHA places them into a

similar category of the previously reported 3 "pre-malignant" cases (Cercek and Cercek, 1974). They are in contrast to cases of benign pituitary tumours, lipomata and benign growth of prostate which did not respond to CaBP and gave a normal response to PHA, *i.e.* RR_{SCM} values greater than 1.2 (Cercek and Cercek, 1974). More data on benign cases are being collected.

In summary, this study indicates that changes in RR_{SCM} values after surgery may become a useful aid to check if the malignant growth has been removed successfully and to monitor possible recurrence of the disease.

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