

SERUM RECAF DECREASES AFTER SURGERY IN PATIENTS WITH EARLY STAGES OF BREAST CANCER.

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Objective

RECAF (the receptor for AFP) is an oncofetal antigen expressed by most types of cancer. Previous studies have shown that this marker is significantly increased in the serum of patients with early stages of breast, prostate and ovarian cancer. The aim of this study was to compare serum RECAF concentration before and after surgery in patients with early stages of breast cancers.

Materials and Methods

RECAF was measured with a competitive RIA. Purified RECAF was labeled with ¹²⁵I- using the Chloramine-T method. The ¹²⁵I-RECAF (100 ng/ml) was mixed with a suitable dilution of human serum and incubated for 2 hours at 24°C in 96 well plates coated with an anti-RECAF monoclonal antibody (1.4G11). After washing, the remaining radioactivity was measured with a gamma-counter. RECAF Units (RU) were interpolated on a Logit/Log standard curve using a previously calibrated MCF-7 cell extract.

Samples: The study measured the pre-surgery and post-surgery serum RECAF concentration in 27 patients with breast cancer stages I + II. Twenty of those patients were tested within 30 days after surgery and 7 were tested within 30-60 days after surgery. Sera from 15 healthy donors were also tested.

Results

Distributions: The distribution of the preoperative, postoperative and healthy samples was Log-Normal, with Shapiro-Wilk values of W=0.98 (p=0.92), W=0.97 (p=0.70) and W=0.99 (p=0.99) respectively. Table 1 shows the descriptive statistics for each group.

TABLE 1							
Samples	N	Mean	SD	Median	Ln(Mean)	Ln(SD)	Ln(Median)
Preoperative	27	9,238	4,024	8,430	9.04	0.43	9.04
Postoperative 30 days	20	6,279	1,826	6,214	8.71	0.28	8.73
Postoperative 30-60 days	7	5,674	1,915	5,148	8.60	0.31	8.55
Healthy controls	15	3,470	756	3,283	8.13	0.21	8.10

Sensitivity and specificity of the test: Figure 1 shows the ROC curve resulting from comparing the preoperative 27 cancer samples with the healthy controls: The results were consistent with previously reported results for breast cancer. At the standard 4,700 RU cutoff, 26/27 pre-operative cancer samples were positive (96% sensitivity) and 14/15 samples from healthy individuals were negative (93% specificity). With a cutoff of 5,500 RU, the sensitivity was 89% and the specificity was 100%.

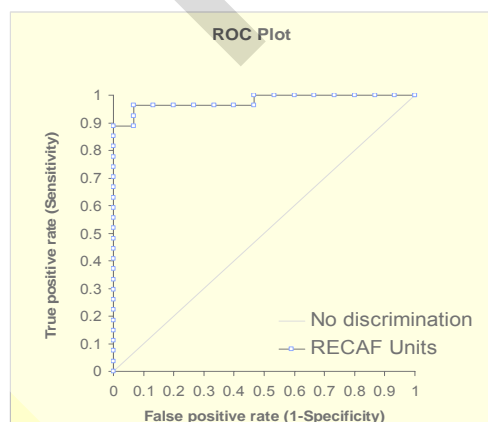


Figure 1. ROC curve of preoperative cancer samples vs. healthy controls. Area under the curve (AUC) = 0.98.

Results (cont.)

Preoperative vs. postoperative RECAF: Figure 2 shows the distribution of RECAF depicted in Table 1.

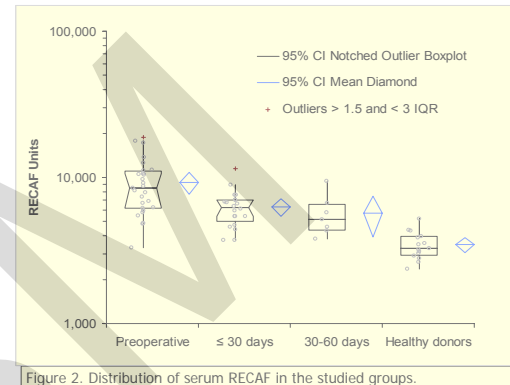


Figure 2. Distribution of serum RECAF in the studied groups.

The $(RU_{preoperative} - RU_{postoperative}) / RU_{preoperative}$ ratio (percentage drop) 30-60 days after surgery was higher than the percentage drop for samples taken within 30 days after surgery ($t=-2.23$, $df=10$, $p=0.025$).

Figure 3 shows the preoperative and postoperative RECAF values. Samples were sorted in decreasing order relative to the preoperative RECAF value.

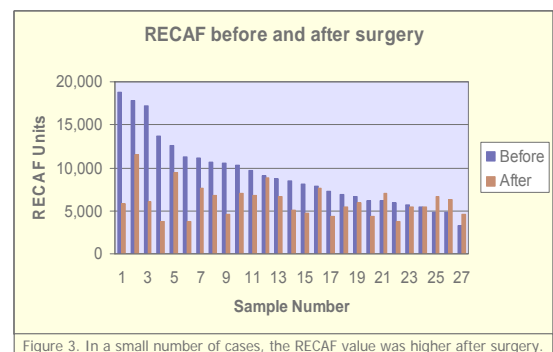


Figure 3. In a small number of cases, the RECAF value was higher after surgery.

A small number of samples had more RECAF after surgery than before the operation but this was not related to the time of extraction after surgery.

Figure 4 shows that the higher the preoperative RECAF value, the higher the drop after surgery RECAF ($r=0.89$).

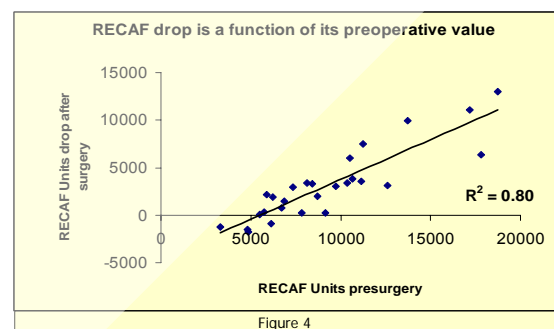


Figure 4

Conclusions

The RECAF test detects early stages of breast cancer with high sensitivity and high specificity. Circulating RECAF drops significantly following surgery, yet they still stay higher than healthy donor values 60 days after surgery.