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SHORT COMMUNICATION

Can IgA, C3, IL-6 and TNF-α act as predictors for reoccurrence of breast cancer among Iraqi women?

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ABSTRACT

Blood samples were collected from 30 women with age ranged from 27 – 70 years after 3 cycles of chemotherapy. Sera were used for IgA, IgG, IgM, C3, C4, IL-6 and TNF-α estimation. After 3 cycles of chemotherapy, all the immunological parameters reduced except TNF-α. Patients who developed disease reoccurrence after chemotherapy exhibit a significantly higher IgA, C3, IL-6 and TNF-α levels after 3 cycles of chemotherapy than patients who did not ($p < 0.05$). Therefore, serum IgA, C3, IL-6 and TNF-α can be used as predictors for breast cancer reoccurrence.

Keywords: Breast cancer, Complements, Immunoglobulines, Interleukines, Women

Following an activating stimulus, CD4 + T-helper cells that are Th1-polarized secrete IFN-γ, TNF-α, IL-2, and IL-12,[1] which in turn induce upregulation of antigen processing, can induce expression of MHC class I and II molecules, and can induce other antigen display cofactors in neoplastic cells. Th1 CD4 + T-helper cells also enhance antitumor immune responses by secretion of INF-γ, which in turn induces activation of macrophage cytotoxic activity.[2] Serum IgA, IgG, IgM, C3, C4, IL-6 and TNF-α were measured for 30 women, aged 27 – 70 years.[3,4]

Serum IgA was significantly higher in patients who developed recurrence than patients who did not ($p < 0.05$) (Table 1). Patients who developed recurrence exhibited a lower IgM level (158.81 ± 49.20 mg/dl) than those who did not (185.58 ± 68.40 mg/dl). However, it was statistically not significant (Table 1). A significantly higher C3 level (209.68 ± 71.71 mg/dl) was observed in patients who developed disease recurrence than

Table 1. Immunological parameter after three cycles of chemotherapy of the patients who developed recurrence and patients who didn't develop recurrence.

Parameter	Recurrence group (mean ± S.D)	Non recurrence group (mean ± S.D)	Significance
IgG (mg/dl)	1483.36 ± 711.73	1213.57 ± 511.03	NS
IgA (mg/dl)	529.38 ± 123.77	327.36 ± 180.58	<0.05
IgM (mg/dl)	158.81 ± 49.20	185.58 ± 68.40	NS
C3 (mg/dl)	209.68 ± 71.71	151.77 ± 42.78	<0.05
C4 (mg/dl)	43.68 ± 22.26	31.62 ± 11.65	NS
IL-6 (pg/ml)	284.16 ± 33.97	191.58 ± 74.78	<0.05
TNF-α (pg/ml)	484.32 ± 357.02	166.41 ± 122.88	<0.05

those who did not (151.77 ± 42.78 mg/dl) ($P < 0.05$) (Table 1).

Patients who developed recurrence exhibit a higher C4 level than patients who did not; but it was statistically not significant (Table 1). Patients who developed recurrence exhibit a significantly higher IL-6 level (284.16 ± 33.97 pg/ml) than those who did not (191.58 ± 74.78 pg/ml) ($P < 0.05$) (Table 1).

Patients who develped recurrence showed a significantly higher TNF-α level (484.32 ± 357.02 pg/ml) than those who did not (166.41 ± 122.88 pg/ml) ($P < 0.05$) (Table 1).

The IgA elevation reflects the load and activity of the melignant cells through host immune modulation or secretion of IgA by their own cells. This gives serum IgA a novel role in breast cancer patients prognosis. Since complement system has been activated through the calssical pathway,[5] C3 can be beneficial in breast cancer prognosis and patients follow up during chemotherapy. IL-6 has an important role in tumour growth and metastasis and can illustrate the extent and the subclinical spread of the disease. Thus, IL-6 can be an important prognostic and predictive marker, as well as a vital treatment target in breast cancer patients. There is significant greater TNF-α level for patients who develop recurrence, in comparison to those who did not. That would be in consistence with the work of Nenova et al.,[6] who revealed that cancer recurrence for patients exhibited TNF-α enhancement after third chemotherapy cycle. Therefore, serum TNF-α could be used clinically as a useful tumour marker for disease extent and outcome of breast cancer. In conclusion, serum IgA, C3, IL-6 and TNF-α can be used as a predictors for breast cancer recurrence.

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