Total IgA and IgG in Sera of Patients With Different Primary Malignancies

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The concentrations of total serum IgA and IgG of 267 patients with different primary malignant tumors were measured by ELISA. Total serum IgA increased by 30% to 40% in patients with malignancies associated with mucous membranes (nasopharyngeal, gastrointestinal and bronchial carcinomas), while the change in total serum IgG was negligible. Although, the changes in Ig level could be influenced by many host factors, these data call attention to the potential indicative role of total serum IgA levels. Further studies are required to establish links between serum IgA levels and stages of tumor growth or tumor progression in order to use these values as prognostic factors. (Pathology Oncology Research Vol 2, No1–2, 66–68, 1996)

Key words: IgA; IgG; malignant tumors

Introduction

Immunoglobulin A (IgA) is the first, most efficient protector and the major Ig synthesized along the mucosal surfaces. IgA can also be produced by plasma cells anywhere in the body.1,11

The local active form, secretory IgA (SCIgA), is effective against bacterial and viral infections, and, presumably, against tumor antigens. Circulating SCIgA loses the secretory component (SC) which recognizes the receptors on the biliary epithelial cells of healthy liver.2 Attempts to evaluate serum concentrations of IgA indirectly by measuring the concentrations of serum SC failed to give relevant results.1,13

It is known that IgA synthesis is stimulated in tissues with primary malignant tumors.3 The increase of total serum IgA is accompanied by high levels of serum carcinoembryonic antigen (CEA) and α-fetoprotein (AFP).3,11 In patients with colon carcinoma, the serum levels of secretory IgA were related to Duke’s stage.6 An important effect of IgA is downregulating tumor necrosis factor α (TNFα) and interleukin-6 (IL-6) production, whereas IgG has no such effect.11 The use of specific IgA and IgG antibodies as "screening markers" in malignancies associ-

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Figure 1. Values of serum IgA concentration measured by ELISA (Kruskal-Wallis test: p < 0.001) in different groups of patients. The bars show the minimum/maximum values, the big boxes the values between 25%-75%, and the small boxes the median value.
Serum IgA/IgG in Patients With Primary Tumors

![Box & Whisker Plot: VAR1](image)

**Figure 2.** Values of serum IgA measured by RID. (p < 0.001).

Sera were obtained from 267 patients aged from 25 to 70 years of both sexes, as soon as they were admitted to the clinic. Pathological diagnosis was provided later. The samples were grouped according to the location of primary malignant tumors: 1. control (clinically healthy adult persons of the same population: 38 men and 20 women); 2. nasopharyngeal area: 67 samples; 3. uterus/ovary: 27 samples; 4. breast: 68 samples; 5. lung: 55 samples; 6. gastrointestinal tract: 28 samples, and 7. skin: 16 samples.

All sera were tested for IgA and IgG by double gel diffusion on 1.5% agarose, and then stored at −20°C. Detection of serum IgA and IgG concentrations was performed by ELISA. Radial immunodiffusion (RID) was used as a control during the development of the ELISA.

Levels of significance for comparison between patients' and control groups were estimated using the Kruskal-Wallis test. The average increase (compared to control) of total serum IgA in relation to the average increase of total serum IgG in each patient group was evaluated. An index (I) was introduced to measure the increase of IgA % relative to the increase of IgG %. $I = \frac{\text{IgA} \%- \text{IgG} \%}{\text{IgA} \%}$.

**Results and Discussion**

The concentrations of serum IgA and serum IgG measured by ELISA are shown on Fig. 1, by RID on Fig. 2, and values for IgG measured by ELISA on Fig. 3.

![Box & Whisker Plot: VAR5](image)

**Figure 3.** Values of serum IgG concentration measured by ELISA. (p < 0.1). Symbols see on Fig. 1.

Although all of these data could be influenced by many host factors (e.g. liver function, Ig expression by non-tumorous tissues) the changes call attention to the potential indicative role of total serum IgA level. Again,
further studies are required to establish any link of IgA levels to stages of tumor growth or to tumor progression in order to use them, essentially, as prognostic factors.

References