

IMMUNOGLOBULINS LEVELS IN SERA OF PATIENTS WITH NEOPLASIA.

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ABSTRACT

Blood samples (26) were collected from patients with neoplasia from the oncology center in Basrah and (4) from healthy people as control group, all these submitted to Single Radial Immunodiffusion test (SRID for IgG and IgM), the results showed a higher level in both types. The average of IgG level was 1136.2 mg/dl in comparison with the control group 1003.8 mg/dl, while IgM level reached to 181 mg/dl in comparison with the control group 155.4 mg/dl.

INTRODUCTION

Cancer is not just one disease, but a large group of almost one hundred diseases. Its two main characteristics are uncontrolled growth of the cells in the human body and the ability of these cells to migrate from the original site and spread to distant sites like the circulatory and lymphatic tissues. If the spread is not controlled, cancer can result in death (Wikipedia, 2009; Eales, 1996). Persisting elevation of IgG and IgM may join the stimulation of the B-cell system by cancer antigen. Such a clinical procedure may be recommended because it may favourably influence the immunological system. (Darewicz *et al.*, 1984; Berekarda, 1999). Many studies dealt with the evaluation of immunoglobulin levels, however most of them agreed with the idea that says the determination of serum immunoglobulins may be a useful, as an additional

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parameter in the evaluation of therapeutic responses in patients with many types of cancer like prostate , breast and head and neck cancer (Gurcel *et al.*,1973 ; Pettingale *et al.*, 1977 ; Vinzenz *et al.* , 1986). There was, however, a positive correlation between the extent of metastatic cancer and the serum level of various immunoglobulins. The findings suggest a secondary defense reaction against increasing tumour load, and this may be valuable in following the levels in cancer patients, as a guide to subclinical spread of the disease. (Pettingale *et al.*, 1977) , also there was a Localization of immunoglobulins in the site of the cancer particularly IgM, which was characteristically found in stroma and lumen along with intracellular localization in prostatic carcinoma (Gahankari and Golhar , 1993).

MATERIALS AND METHODS

Blood samples were collected from cancer patients in the oncology center in Basrah and healthy people (26 Ca patient ; 4 control group) patients distributed according to the type of cancer as shown in table 1 , serum separated from the samples and IgG and IgM levels measured by Single Radial Immunodiffusion Assay (SRID) (LTA s.r.l./Milano/Italy) , 5 μ L from the serum added into each pore in the plate , the plates incubated , the precipitation ring measured with a slide rule and compared with the values in the reference.

Table 1 . *The patients and type of cancer .*

Type	Number
<i>Acute Lymphatic Leukemia (ALL)</i>	6
<i>Lymphoma</i>	5
<i>Non Hodgkin Lymphoma (NHL)</i>	2
<i>Chronic Myloid Leukemia (CML)</i>	2
<i>Breast cancer</i>	2
<i>Bladder cancer</i>	1
<i>Leukemia</i>	1
<i>Sarcoma (neck ; back ; femur and other types)</i>	7

RESULTS AND DISCUSSION

The average of IgG level was 1136.2 mg\dl in comparison with the control group 1003.8 mg\dl (Fig.1 , table 2). while IgM level reached to 181 mg\dl in comparison with the control group 155.4 mg\dl .(Fig . 2 table 2) .

Table 2 .The precipitation diameters and their values of IgG and IgM .

NO	Diameters (IgG)	IgG concentration	Diameters (IgM)	IgM concentration
Patients				
1	6.5	982.1	8.8	315.5
2	6.5	982.1	6	119..0
3	9.3	2365.3	6.9	174.0
4	6.2	863.0	4	24.2
5	6.3	902.1	7.4	207.9
6	7.1	1237.3	7.8	236.8
7	7.4	1373.3	6.5	148.6
8	7	1193.2	9.5	376.2
9	7.1	1237.3	6.5	148.6
10	5.5	606.9	4.5	44.3
11	6	786.7	5	66.8
12	5	442.8	6.8	167.5
13	5	442.8	5.4	86.6
14	7.8	1563.4	5	66.8
15	7.5	1419.9	8.9	323.9
16	7.6	1467.1	5.1	71.6
17	7	1193.2	6.3	136.5
18	7.9	1612.5	7	180.6
19	6.8	1106.9	8	251.7
20	8.2	1763.5	9	332.4
21	5.5	606.9	6.2	130.6
22	7.8	1563.4	8	251.7
23	8	1662.2	12	532.5
24	7	1193.2	5.8	107.8
25	7	1193.2	8	251.7
26	7.2	1282.0	5.2	76.5
Control				
1	7	1193.2	6.7	161.1
2	7	1193.2	6	119.0
3	7	1193.2	7	180.6
4	5	442.8	6.7	161.1

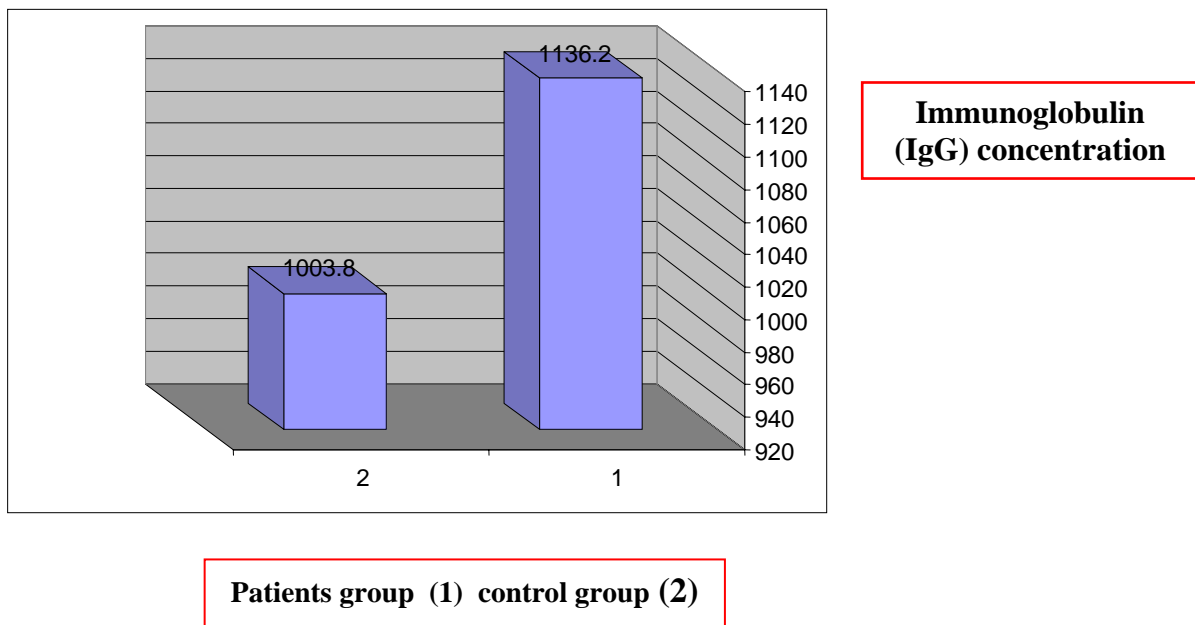


Fig.1 The average of IgG in patients and control groups .

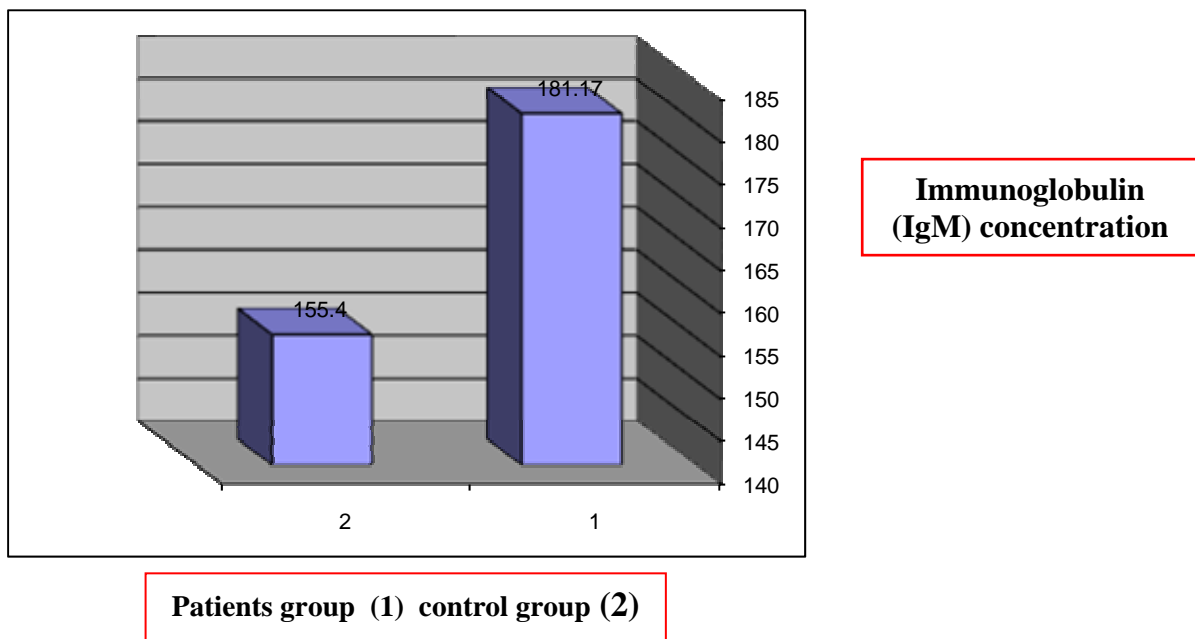


Fig. 2. The average of IgM in patients and control groups.

This agreed with Tang *et al.*, (2007) study who pointed out to the elevation of both types of immunoglobulins which may be explained by tumor cell antigens often elicit the production of specific serum antibodies . These antibodies can play a protective role in eliminating the tumor through several mechanisms . In some cases the antibody can activate the complement system , leading to

assembly of the membrane attack complex , pore formation , and complement – mediated lysis . Antibodies bound to tumor cells may also facilitate the influx of inflammatory cells , especially neutrophils and macrophages . Antibodies bound to tumor cells may also facilitate antibody – dependent cell mediated cytotoxicity (ADCC) .Both macrophages and natural killer cells have receptors for the FC region of certain antibody classes. The antibody thus serves to bring these non specific immune cells into contact with the tumor (Kuby , 1993). Some patients who don't show any elevation and their immunoglobulins within the normal value may suggest a disturbance in the secretory immune system, and immunologic defect (Roberts *et al* ., 2006) .

REFERENCES

- Benjamini,E., R. Coico and G. Sunshine. 2000. Immunology, A short course. 4th ed. Tumor Immunology.¹³ Wiley-Liss, New York.pp. 498.
- Berkarda, B. M . 1999. Serum Cardiolipin Antibodies in Cancer Patients with Thromboembolic Events. *J.Clin. and App.Throm.*5(3):181-184.
- Darewicz, J. , J. Prokopowicz and K. Podkowicz . 1984. Serum levels of immunoglobulins IgA and IgM in patients with renal cancer subjected to arterial embolization and nephrectomy. *J. Internal . Uro. And Neph* .17 (3) :211-213.
- Eales, L. 1996. Immunology.Tumor Immunology 20. Wiley . New York . pp.299
- Ghankari , D. R. and K.B. Golhar . 1993. An evaluation of serum and tissue bound immunoglobulins in prostatic diseases.*J.PGM.* 39 (2):63-67.
- Gursel E. O. , M.R. Megalli and R.J. Veenema , 1973. Serum immunoglobulins in patients with prostate cancer .*J.Uro.Res.*1(4):145-158.
- Kuby J. 1993. Immunology.Complement system¹⁵. W.H. Freeman company. 585Pp.
- Pettingale ,K. W. , T. G . Merrett and D.E . Tee , 1977. Prognostic value of serum levels of immunoglobulins (IgG, IgA, IgM and IgE) in breast cancer: a preliminary study.*B J Cancer.*36(5):550-557.

Roberts M. M., E.M. Bathgate and A. Stevenson . 2006. Serum immunoglobulin levels in patients with breast cancer.J.Canc.Cytopath.36(1).221-224.

Tang R. G., X.H. Yuan , T.T. Tang , X.G. Tang , Y.Q. Hang , H.J. Qin , H.M. Chen , W.Z. Fang , and X.K. Long . 2007. A dynamic observation on serum cytokine and immunoglobulin (IgG, IgA, IgM) in patients with esophageal cancer. J. Zhonghua Yu Fang Yi Xue Za Zhi. 41:35-8.

Vinzenz K. , R. Pavelka , E. Schonhi , and F. Zekert . 1986. Serum Immunoglobulin Levels in Patients with Head and Neck Cancer (IgE, IgA, IgM, IgG). J.Onco.43(5):316-322.

WiKipidia .The Free Encyclopedia .2009.www.en.wikipedia.org/wiki/Cancer.

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4			26
1136.2	IgM	IgG	IgM IgG
	.155.4 mg\dl	1003.8 mg\dl	mg\dl mg\dl
			181 mg\dl