THE IMPORTANCE OF THE IMMUNOLOGICAL MARKERS IN TESTICULAR CARCINOMA

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Abstract: *Biological markers are substances produced by the tumour, detectable in the peripheral blood, urine, tumour tissue and identifiable through radio–immunology laboratory methods. The most usual biomarkers from testicular neoplasm with prognostic and predictive importance for diagnosis and treatment are the b-HCG, AFP.*

Keywords: *testicular carcinoma, biological markers*

Rezumat: *Markeri biologici sunt substanţe produse de tumoră evidenţiabile în sângele periferic, urină, ţesut tumoral, identificabile prin mijloace de laborator radio-imunologice. Cei mai uzuali biomarkeri din neoplaziile testiculare cu rol prognostic şi predictiv pentru diagnostic şi tratament sunt b-HCG, AFP.*

Cuvinte cheie: *cancer testicular, biomarkeri*

INTRODUCTION

Research made within the last years revealed a diversity of biological products – biological markers which, on one hand are substances produced by the tumour itself, observable in the peripheral blood, urine, tumour tissue and, on the other hand, those biological phenomena intimately linked to the presence of the tumour and identifiable especially through radio–immunology laboratory methods with prognostic and predictive importance for diagnosis and treatment. The most important markers for the testicular carcinoma are the AFP and the HCG.

AFT is an oncofetal antigen, which is useful in monitoring the patients with nonseminoma testicular carcinoma. The pre-therapeutic typing of b-HCG is also important. The major use of this marker in medical practice is described by monitoring the therapeutic response of the patients with testicular tumours.(3,12)

AFP and b-HCG parallel typing has to be made monthly, for a period of two years. Serum concentration of beta sub-unity (beta-HCG) is high when talking about patients with germinal testicular tumours, both with pure seminoma and nonseminoma tumours.(4,9)

OBJECTIVES AND METHOD

The present paper describes the male genital-urinary cancer, e.g. testicular carcinoma, and wishes to accomplish a preliminary prospective analysis over a 46 homogenous group of patients with testicular carcinoma, in order to build up a clinical-therapeutic characterization and to identify theoretical possibilities of using the immunological markers when diagnosing this type of cancer, the relapses of the illness, using them as prognosis and monitoring the treatment factors.

Through this analysis, we assessed a series of clinical and para-clinical aspects collected from the patients with testicular carcinoma (the extension degree of the tumour, stage of the disease, the moment of the local recurrence and the appearance of the metastasis), in order to show some possible connections between these and the value of the immunological markers.

Observed markers: for the testicular carcinoma – b-HCG and AFP

Study inclusion criteria: TNM stages; histo-pathological confirmation: information regarding the extension degree of the tumour and ganglionic infestation; patients with specific oncological treatment; the value of the immunological markers at the beginning and during the treatment; objective documentation regarding the metastasis and the local recurrence.

RESULTS AND DISCUSSIONS

During the present study, we analyzed a group of 46 patients, aged between 35-53 years old (average age – 35.5 years old).

From the total number of 46 patients, 44 (98.8%) were completely operated and 2 patients (4.03%) were incompletely operated.

18 patients (39.13%) registered an evolution of the illness (bony, pulmonary, liver metastasis or local recurrence) and 28 patients (60.89%) did not register any evolution of the disease.

No other tumour benefits so much from the use of the serial markers in the diagnosis stage, during staging, when evaluating the treatment and the prognostic response, as the use of markers in treating testicular carcinoma: AFP and beta-HCG. Diagnosis correlation between markers increase and the presence of a germinal tumour is very large. High values for AFP and beta-HCG might indicate a germinal tumour diagnosis.

In the moment of diagnosis, we detected normal values of the tumour markers: AFP in 28 patients (60.89%) and beta-HCG in 24 cases (53.48%), and high values of AFP in 18 cases (39.13%) and beta-HCG in 22

patients (47.82%).

Table no. 1. Values of the markers upon diagnosis

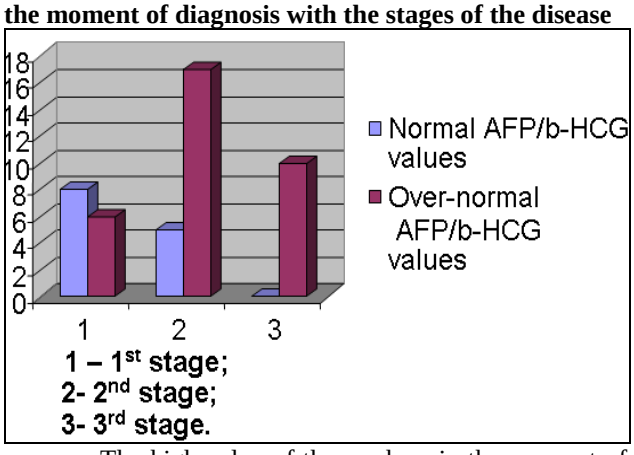
Markers value in the moment of diagnosis	Normal values	High values
AFP	28 (60.89%)	18 (39.13%)
Beta-HCG	24 (53.48%)	22 (47.82%)

In the moment of diagnosis, we registered AFP and/or b-HCG over-normal values in 36 cases (76.95%), and normal values of AFP and/or b-HCG in 10 cases (21.73%); p = 0.05 (Diagram IV)

The correlation between the raising of tumour markers values and the extension of the illness, when talking about germinal tumours, required the use of markers as criteria for staging. During the present study we identified over-normal AFP value in 18 cases (%): in the 1st stage of the illness, a high AFP value was registered in only 3 patients, less than those registered in the patients in the 2nd (9 patients) or the 3rd (6 patients) illness stages.

An over-normal beta-HCG value was registered in 22 cases: in the 1st stage of illness, a high beta-HCG value was registered in only 6 patients, less than those registered in the patients in the 2nd (8 patients) or the 3rd (8 patients) stages of the illness; so, this value of the marker identified in the moment of diagnosis has a great importance in establishing the diagnosis in more advanced stages of the disease; p = 0.05 (Diagram IV)

Diagram IV. Correlation between AFP +/- b-HCG in the moment of diagnosis with the stages of the disease



The high value of the markers in the moment of diagnosis may be an important indicator of the testicular carcinoma diagnosis, irrespective of the stage of the illness, the result being statistically significant.

In 8 cases of the patients with seminoma tumours, in the moment of diagnosis registered high beta-HCG in 6 cases and AFP in only 3 cases: while in the case of nonseminoma testicular tumours, we registered high AFP in 25 cases and beta-HCG in 16 cases (Table no. 4).

High AFP values are diagnosis indicators for nonseminoma testicular tumours associated or not with high beta-HCG.

Table no. 4: AFP and beta-HCG correlated with illness histology

Histology	High AFP	High Beta-HCG	High AFP + beta-HCG	Total
Pure seminoma	3	6	2	11
Nonseminoma tumor	20	10	15	35

We note that a number of 26 (56.52%) patients had normal value markers, all along the survey; 2 of them (4.34%) registered an evolution of the illness, and 24 (52.17%) registered no evolution in their illness.

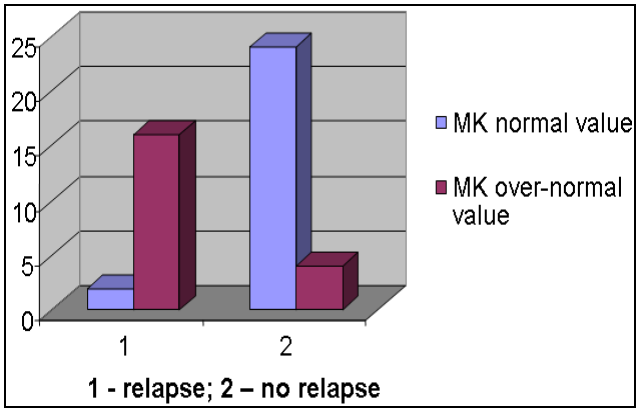
We note that a number of 22 (43.47%) patients had over-normal value markers, all along the survey; 16 of them (34.78%) registered an evolution of the illness, and 4 (8.69%) did not register any evolution in their illness. (Table 5, Diagram V).

Table no. 5 and Diagram V: AFP +/- beta-HCG values searched correlated with the evolution of the disease

Markers values in evolution	Relapse	No relapse	Total
Normal value	2 (4.34%)	24 (52.17%)	26 (56.52%)
Over-normal value	16 (34.78%)	4 (8.69%)	20 (43.47%)
Total	18 (39.13%)	28 (60.86%)	46 (100%)

p < 0.05

Picture no. 3. AFP+/-betaHCG values in evolution and correlated to the evolution of the disease.



The immunological markers identified both, in the moment of diagnosis and during treatment, may indicate an evolution of the disease, either by relapse or by metastasis, or by both of them.

Tumour markers typing are also compulsory in assessing the therapeutic response. Although all the lesions disappear, a high value of the marker requires a specific 2nd line therapy.

These immunological markers identified both, in the moment of diagnosis and during treatment, may indicate an evolution of the illness, either by relapse or metastasis, or both.

In monitoring the patients' therapy, we noted that from the 26 patients (56.52%) with normal value markers, the majority of them, meaning 24 (52.17%) did not register any evolution of the disease and only 2 patients (4.34%) registered an evolution of the illness; from the 20 patients (43.47%) with over-normal value markers, the majority, meaning 16 (34.78%) registered an evolution of the disease and only 4 patients (8.68%) did not register any evolution of the disease, the result being statistically significant.

AFP and beta-HCG values prove to be indicators of negative prognosis regarding the disease, allowing detecting the disease, a few months before its evolution.

CONCLUSIONS

1. High AFP and beta-HCG values are related to the advanced stages of testicular neoplasia;
2. High AFP and beta-HCG values in the moment of diagnosis are of great help in determining the diagnosis of testicular carcinoma;
3. AFP and beta-HCG are useful in monitoring the treatment and they can be used as prognosis markers for testicular neoplasia (detecting high values of the tumour markers after a certain period of time, after ending the treatment, meaning that the patient faces an unfavourable evolution of the illness, with possible relapse or tumour extension with metastasis).

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