

## AFP AND B-HCG AS TUMOR MARKERS IN TESTICULAR TUMORS

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**SUMMARY :** Testicular tumors consist 2 % of whole cancers seen in males. They usually occur between the ages of 25 and 45 and constitute the third most frequently encountered malignancy in 15-34 years of age. For this reason, diagnosis, treatment and follow - up of these patients are very important.

The purpose of this study is to evaluate the importance of tumor markers in the follow -up of patients with testicular tumors. The study included 38 male patients with different testicular tumors, who have been admitted in our department between 1987-1991. As it is well known, markers generally found elevated in non-seminomatous tumors. In our series we found alpha fetoprotein (AFP) elevated in 13 (46.42 %) and beta-human chorionic gonadotropin (B-HCG) in 11 (39.28 %) of our cases. After adequate treatment AFP decreased in 10 (76.91 %) patients and B-HCG decreased to normal levels in 8 (72.72 %). We observed no marker elevation in seminomatous metastase.

**Key Words :** Tumor, AFP, B-HCG.

### INTRODUCTION

Tumors of testis complies 2 % of all cancers in males and 60 % of testicular tumors have been encountered in 25-44 years of age (Javadpor et al. 1983). It is the third leading cancer among males. For this reason diagnosis, treatment and follow - up of this patients are of utmost importance.

Recent development in radioimmunoassays for tumor markers B-HCG and AFP have dramatically improved the management of testicular tumors. These tumor markers are especially very important in non-seminomatous tumors. B-HCG is a glycoprotein of molecular weight 38.00. Normal males do not have significant amounts of B-HCG, but testicular tumors produce it. Thus, it is known as a sensitive tumor marker (Braunstein et al.

1973). Its half life is 24 hours.

AFP, also a glycoprotein, has a molecular weight of 70.000. It is present in high concentrations in fetus and newborn, but in concentrations less than 16 ng/ml. in normal adults (Waldmann et al. 1974). AFP is especially found elevated in embryonal carcinoma and teratocarcinoma. Its half life is 5 days.

The detection of these 2 tumor markers in elevated concentrations generally indicates a testicular tumor although their absence does not rule out its presence (Levi et al. 1989, Stotar et al. 1988).

Their significance in testicular tumors was first understood in 1980 (Luck et al. 1980).

The study presented below, is to establish the importance of these markers in malignant testicular tumors.

## MATERIALS AND METHODS

38 patients with testicular tumors have been treated in the Department of Urology, Gazi University, Faculty of Medicine between 1987 and 1991.

Age range was 5-46 with an average of 30.18 years.

As a basic treatment 37 (97.36 %) patients had undergone high inguinal orchiectomy in our department. One patient had been operated in another hospital.

All patients had undergone through radiological and laboratory examinations; besides AFP and B-HCG radioimmunoassay analysis done in the first postoperative week.

Table 1 shows the histopathological distribution of the testicular tumors based on Mostofi and Price (1973) classification.

Histopathology	Number	%
Seminoma	10	26.31
Embryonal carcinoma	10	26.31
Teratocarcinoma	6	15.79
Mixed type	10	26.31
Choriocarcinoma	2	5.26
TOTAL	38	100.0

Table - 1: Histopathological distribution of testicular tumors (Mostofi and Price, 1973).

All cases were later, staged with the findings of CT scan, ultrasound imaging and other specific laboratory test.

For the clinical staging of seminomatous and non-seminomatous tumors we used M.D. Anderson Hospital staging system (Table 2,3).

Tumor marker assays have been determined for all patients before, during and after chemotherapy sessions. 4 cycles of PVB(\*) chemotherapy regimes by Einhorn and Willims (1980) were given.

## RESULTS

Mean follow-up period of our patients is 3.2 ye-

Histopathology	S1	S2A	S2B	S3A	S3B-1	S3B-2	S3B-3	S3B-4
Embryonal carcinoma	8	-	-	2	-	-	-	-
Terato carcinoma	2	-	-	4	-	-	-	-
Mixed type	3	3	1	1	2	-	-	-
Choriocarcinoma	-	-	-	2	-	-	-	-

Table - 3 : Clinical stages of non-seminomatous tumors (MD. Anderson Hospital) (S : Stage).

Stage	Number	%
I	8	80
II A	1	10
II B	1	10
III A	-	-
III B	-	-

Table - 2 : Distribution of seminomas (MD. Anderson Hospital).

ars in seminomatous and 2.2 years in nonseminomatous group. Of the 28 non-seminomatous testicular tumors, AFP was found elevated in 13 (46.42 %) cases before treatment. Following orchiectomy, AFP decreased to normal levels in 10 (76.91 %) cases and this level persisted through follow-up. In the remaining 3 (23.09 %) cases AFP levels remained high.

Table 4. shows AFP levels in non seminomatous group. In nonseminomatous group AFP levels after orchiectomy were still high in 1 teratocarcinoma, 2 mixed type and 1 choriocarcinoma patient following chemotherapy. Only one mixed type tumor patient had normal AFP level while others were above normal.

As far as B-HCG concerned, we had elevated levels in 11 (39.28 %) of our cases before treatment. After adequate treatment we found B-HCG levels decreased in 8 (72.72 %) of the cases. In the remaining 3 (27.28 %) including 2 choriocarcinoma, the levels maintained high despite treatment.

Table 5. shows, B-HCG levels in non seminomatous group. We had no elevated levels of AFP and B-HCG in seminomatous group.

## DISCUSSION

AFP and B-HCG are valuable in evaluation of the response to treatment, monitorisation of the therapy and diagnosis of the relapses in patients with non - seminomatous tumors (Newlando et al. 1978; Pedersen et al. 1984).

\* PVB : Vinblastine, Bleomycin, Cisplatin

Histopathology	Number	%	Pre-op	Post-op	Before Chemot.	After Chemot.
Embryonal carcinoma	4	40	↑↑	N	N	N
Teratocarcinoma	4	66.66	↑↑	1P	↑	↑
Mixed type	4	66.66	↑	2P ↑	2P ↑	1P ↑
Choriocarcinoma	1	50	↑	↑	↑	↑

Table - 4 : AFP levels in non-seminomatous group. P : Patient, N : Normal.

Histopathology	Number	%	Pre-op	Post-op	Before Chemot	After Chemot
Embryonal carcinoma	2	40	↑↑	N	N	N
Teratocarcinoma	4	66.66	↑↑	1P ↑	1P ↑	1P ↑
Mixed type	3	33.333	↑↑	N	N	N
Choriocarcinoma	2	100	↑↑	↑↑	↑↑	↑↑

Table - 5 : B-HCG levels in non-seminomatous group.  
N : Normal, P : Patient

The prognostic role of B-HCG in seminomas is still controversial (Buther et al. 1985; Ford et al. 1985). B-HCG levels are elevated 100 % in choriocarcinomas, 25 % in yolk sac tumors and 7.7 % in seminomas (Javadpour et al. 1980). Although B-HCG elevation seems to be more significant in non-seminomatous tumors, AFP elevation was found to be more significant in 5 of 8 study series (Droz et al. 1988; Luck et al. 1980; Report, 1985).

We had no B-HCG level elevation in our seminoma group.

In non-seminomatous tumors AFP was elevated in 11 (39.29 %) of the cases before therapy. AFP and B-HCG was lowered to normal in 10 (76.91 %) and 8 (72.72 %) of the patients respectively. These markers were in correlation with the clinical status of the patients and were not found elevated in the follow-up.

Therefore, our opinion is that testicular tumor markers are valuable in diagnosis, staging, treatment and follow-up of the patients with non-seminomatous testicular tumors.

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