TUMORS ORIGINATING FROM THE TESTICULAR TUNICS
A CLASSIFICATION OF THESE TUMORS

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The present authors have reported an interesting case of testicular
tunic tumor occurred in a 33 years old man and, in addition, proposed a
classification of these kinds of tumors.

INTRODUCTION

Tumors originating from the testicular tunics have been supposed to
occur very rarely. The authors had experienced a case of leiomyoma primarily
developed from the tunica albuginea of the testis. We would like to propose a
new classification of testicular tunics tumors together with the clinical des-
cription of this patient.

CASE REPORT

Patient : K. H., 33 years old.
Date of the first examination : July 6, 1974.
Chief complaint : Painless swelling within the scrotum on the left side.
Family history and past history : Not remarkable.
Present illness : The patient first noticed a swollen mass in his left scrotal
portion. The mass was left without any treatment because it had no pain
nor redness. Around the date of the first examination at our urological di-
vision of the University hospital, he wanted to examine precisely because the
mass tended to enlarge gradually.
Status presents : Constitution was medium and nutrition was good. No
pathological changes were found within the chest and abdominal cavity. The
glans penis and prepuce were normal. The mass was touched near the caput
epididymis sinistra. Its hardness was elastic hard but no press pain was
noticed. On the left side, the epididy-

mismis and seminiferous deferent duct were
normal. The testis and deferent duct
were normal. The testis and deferent
duct on the right side were normal.

Laboratory findings

Urine : Clear and negative in sugar,
protein or blood reaction.
Blood : Erythrocyte count was 495×
10⁶/mm³, the number of leukocyte was
5,200/mm³, hemoglobin content was 94%
by Sahli, and hematocrit value was
47%.
Renal function tests : P.S.P. test
proved 37 % 15 minutes later. The am-
ount of creatinine was 1.2 mg/dl.
Serum electrolytes: Serum Na was 140 mEq/l, serum K was 4.7 mEq/l, and serum Ca was 9.3 mg/dl.

Chemical examination of blood: Total protein amount was 7.8 g/dl, and protein fractionation was normal. Cholesterol was shown by a value of 180 mg/dl.

LDH was 180 units, GOT was 20 units and GPT was 22 units.

**OPERATIVE PROCEDURE**

Preoperative diagnosis was a tumor in the left scrotum. Operation for it was made under lumbar anesthesia on July 26 in 1975. First, skin incision of about 6 cm was given at the septal portion of the scrotum. Intra-scrotum mass on the left side visually exposed after removing the tunica dartos. When the proper capsular membranes were surgically opened, about 4 ml of yellowish serosal fluid was retained. The tumor mass evidently originated from the tunica albuginea of the testis and adhered slightly to the capital portion of the epididymis. Isolation from the epididymis was very easy, but the same procedure from the tunica albuginea was impossible. Hence, operation was achieved by extirpation of the mass together with a part of the tunica albuginea. The tunica albuginea was sutured as a rule.

**MACROSCOPIC FINDINGS OF THE EXTIRPATED MASS**

The size of the mass, gray in color, was 7×9×8 mm. The mass was solid, and relatively hard. It was covered with the fibrous capsule. Bleeding and necrosis could not be recognized (Fig. 1).

**HISTOLOGIC FINDINGS**

Microscopically the mass was examined by H. E. staining. The mass was composed of spindle-shaped cells with acidophilic cytoplasm, being arranged irregularly and being eddy-like in part.
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Malignant findings such as mitosis, necrosis, hemorrhage were not found.

In general, the tumor mass was poor in vascular components, and only few vessels surrounded the mass, the figure clearly indicating that the tumor did never originate from the vascular walls. Azan staining and Van-Gieson staining suggested that the tumor had stain-ability of myogenic tissue elements, histological diagnosis was leiomyoma originated from the tunica albuginea (Figs. 2 and 3).

DISCUSSION

Since the first report of rhabdomyosarcoma, originated from the testicular capsule, was made by Rokitansky in 1849, Thompson (1936) collected urologically 51 cases of testicular capsular tumors. Following the summarized report by Sakaguchi (1918) on multiform fibrosarcoma taken place from the testicular thecal membrane in our country, Fujita et al. (1959) collected 13 cases of these types of tumors, Kotsubo et al.

TABLE 1

<table>
<thead>
<tr>
<th>HINMAN &amp; GIBSON (1924)</th>
<th>CAMPBELL (1954) (1963)</th>
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</thead>
<tbody>
<tr>
<td>I. Tunica vaginalis</td>
<td>I. Tunica vaginalis</td>
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<tr>
<td>A. Benign</td>
<td>A. Benign</td>
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<tr>
<td>1. Epithelial</td>
<td>1. Epithelial</td>
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<tr>
<td>a. Adenoma</td>
<td>a. Adenoma</td>
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<tr>
<td>a. Lipoma</td>
<td>a. Lipoma</td>
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<tr>
<td>b. Fibroma</td>
<td>b. Fibroma</td>
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<tr>
<td>3. Heterologous tumors</td>
<td>3. Heterologous tumors</td>
</tr>
<tr>
<td>a. Cystic dermoid (non recorded)</td>
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<tr>
<td>b. Rhabdomyoma</td>
<td>b. Rhabdomyoma</td>
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<tr>
<td>B. Malignant</td>
<td>B. Malignant</td>
</tr>
<tr>
<td>1. Epithelial</td>
<td>1. Epithelial</td>
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<tr>
<td>a. Carcinoma (none authentic)</td>
<td>a. Carcinoma</td>
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<tr>
<td>b. Sarcoma</td>
<td>b. Sarcoma</td>
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<tr>
<td>3. Heterologous tumors</td>
<td>3. Heterologous tumors</td>
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<tr>
<td>II. Tunica albuginea</td>
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<tr>
<td>a. Fibroma</td>
<td>a. Fibroma</td>
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<tr>
<td>b. Sarcoma</td>
<td>b. Sarcoma</td>
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</table>

HERBUT (1952)

Mesothelium : Mesothelioma
Fat : Lipoma
Muscle : Myoma, Leiomyoma
Lymphatics : Lymphagiendothelioma
Connective tissue : Fibroma
Nerves : Neurofibroma
Mesodermal tissue : Chondroma, Sarcoma

OTAGURO (1958)

I. Tunica vaginalis
A. Benign
a. Lipoma
b. Fibroma
c. Myoma
B. Malignant
a. Sarcoma
II. Tunica albuginea
a. Fibroma
III. Tunica vasculosa
a. Hemangiomia
TABLE 2

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I. Tunica vaginalis

A. Benign

1. Epithelial
   a. Adenoma (including Cystadenoma) (THOPSON 1936)

2. Mesoblastic
   a. Lipoma
   b. Fibroma (including Angiofibroma) (IWASHITA 1933, ABE et al., 1969)
   c. Leiomyoma (including Angioleiomyoma) (SHIRAIISHI et al., 1973)
   * d. Neuroma
   e. Neurofibroma (NATSUME et al., 1964)
   * f. Hemangioma
   g. Lymphangioma (NAKANISHI 1952)
   h. Endothelioma (including Lymphangioendothelioma (NORA 1933)

3. Heterologus tumors
   a. Rhabdomyoma
   c. Teratoma

4. Others
   a. Adenomatoid tumor (NAITO et al., 1973)
   b. Mesothelioma (BERBERA 1953)

B. Malignant

1. Epithelial
   * a. Carcinoma

2. Mesoblastic
   a. Sarcoma (including Reticulum cell sarcoma) (YAMAKAWA 1974)

3. Mesothelial
   a. Mesothelioma (KASDON 1969)

4. TERATOMA
   a. Dysontogenic teratoid tumor (WALLER et al., 1953)

II. Tunica albuginea

A. Benign

a. Fibroma
b. Neurofibroma (LEVANT et al., 1948)
c. Leiomyoma
d. Mixed tumor (TAKAYASU 1949)
e. Adenomatoid tumor (KIKUCHI et al., 1968)
f. Mesothelioma (NONAKA et al., 1964)
g. Cyst (ARCAD 1952)

B. Malignant

* a. Sarcoma (Fibrosarcoma, Leiomyosarcoma)

III. Sub-tunica albuginea


b. Hemangioma (ROSENTHAL 1946)

IV. Metastases (SHIRAISHI et al., 1973)

Though we could not find the reports of these tumors, it would be possible that some of their cases could be reported.
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(1971) did 33 cases, and Sakai et al. (1973) also did 36 cases. Melchiori (1852) first described as to the tumors which could be histologically identified as neoplasms evidently developed from the testicular tunica albuginea, and Takayasu (1949) also reported them first in our country. Furthermore, Nonaka et al. (1964) and Kodaira et al. (1971) respectively collected 14 and 15 cases of these types of tumors appeared in our and foreign countries.

The tunica albuginea is properly composed of fibrous elements. This tissue is specified by less vascular components and sometimes large blood vessels can be recognized in the autopsy cases. Probably stimuli such as inflammation would cause new vascularization, and sequential occurrence of leiomyoma from the muscular components of the blood vessels was suspected the most.

Many investigators such as Hinman and Gibson (1924), Herbut (1952), and Cambell (1954), have attempted to make their own classification of the testicular tunic tumors, as shown in Table 1. Cambell (1954) added an item of lymphangioma as (c) of mesoblastic tumor group. Otaguro (1958) classified the testicular tunic tumors into three groups; tumors from the tunica vaginalis, tumors from the tunica albuginea and tumors from the tunica vasculosa.

Because this classification is not comprehensive so as to include new much information for recent 20 years, the present authors have tried to make classification containing these kinds of tumors from many report cases. As is clear from Table 2, we could divided into four groups; the groups of tumors from the tunica vaginalis, from the tunica albuginea and from the tunica vasculosa and the metastatic tumor group.

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REFERENCES


