SURGICAL TREATMENT OF TUMORS OF THE LACRIMAL GLAND
BY CORONAL APPROACH

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ABSTRACT

The purpose of this research is examination of the clinical characteristics, the preparation and the course of the operative treatment of the tumors of the lacrimal gland. The following article presents four cases where a lateral orbitotomy with coronal approach is used. A complete excision of the tumor is conducted. The postoperative observation of the diseased varies between 18 and 114 months, and includes an analysis of the results.

Keywords: lacrimal gland tumors, orbital tumors, coronal approach, lateral orbitotomy

BACKGROUND

The tumors of the lacrimal gland are relatively rarely found and are mostly benign. As a whole they represent 9% from all orbital processes (1). The diseases of the lacrimal gland are divided into inflammatory and lymphoid, followed by the metastatic processes and the primary epithelial tumors (2;3). Primary epithelial lacrimal gland tumors are histologically similar to those arising in the salivary glands. The pleomorphic adenoma and adenoid cystic carcinoma are the most common benign and malignant tumors, respectively (4;5). Given the low frequency of these tumors many publications offer a description of single cases and only a few consider larger groups of patients, observed for a longer period of time (6). The purpose of this study is the examination of the clinical features, the preoperative diagnosis and preparations, the operative treatment and the following postoperative period when treating these tumors.

Tab. 1. Anamnestic and paraclinical data in the four cases (R - Right; L - Left; CT - computer tomography; MRI - magnetic resonance imaging)

<table>
<thead>
<tr>
<th>№</th>
<th>Gender</th>
<th>Age</th>
<th>Complaints (months)</th>
<th>Side</th>
<th>Investigations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>F</td>
<td>51</td>
<td>12</td>
<td>L</td>
<td>CT</td>
</tr>
<tr>
<td>2.</td>
<td>F</td>
<td>51</td>
<td>5</td>
<td>R</td>
<td>CT</td>
</tr>
<tr>
<td>3.</td>
<td>F</td>
<td>72</td>
<td>10</td>
<td>R</td>
<td>CT</td>
</tr>
<tr>
<td>4.</td>
<td>M</td>
<td>62</td>
<td>8</td>
<td>R</td>
<td>CT; MRI</td>
</tr>
</tbody>
</table>

Tab. 2 Clinical data in the four cases (-/+ - anamnestic/examination; ACa - adenocarcinoma; NHL - non-Hodgkin lymphoma; PA - pleomorphic adenoma)

<table>
<thead>
<tr>
<th>№</th>
<th>Exophthalmy</th>
<th>Diplopia</th>
<th>Size (mm)</th>
<th>Treatment</th>
<th>Diagnosis</th>
<th>Observation (months)</th>
<th>Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>+</td>
<td>-/-</td>
<td>26*13</td>
<td>Extirpation</td>
<td>ACa</td>
<td>114</td>
<td>No</td>
</tr>
<tr>
<td>2.</td>
<td>+</td>
<td>+/-</td>
<td>40*35</td>
<td>Extirpation</td>
<td>NHL</td>
<td>56</td>
<td>No</td>
</tr>
<tr>
<td>3.</td>
<td>+</td>
<td>+/-</td>
<td>30*25</td>
<td>Extirpation</td>
<td>PA</td>
<td>43</td>
<td>No</td>
</tr>
<tr>
<td>4.</td>
<td>+</td>
<td>-/-</td>
<td>25*20</td>
<td>Extirpation</td>
<td>PA</td>
<td>18</td>
<td>No</td>
</tr>
</tbody>
</table>

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MATERIAL AND METHODS

In the period 1998-2006 in the Department of Maxillofacial surgery of Naval Hospital – Varna have been operatively treated 4 diseased with tumor of the lacrimal gland. Based
on the hospital's documentation the author performs an
analysis of the data divided in: gender, age, the beginning
of the disease, the side of the gland and the type of imaging
study (tab. 1). The clinical symptoms, the size of the tumor,
the operative treatment and histological diagnosis, as well
as the term of postoperative observation and the discovery
of reocurrence can be found in tab. 2. Exophthalometric
study has been made using the Hertel method. The given
data is anamnestic. The sign (-) marks the lack of diplopia,
the sign (+/-) marks cases in which diplopia occurs only on
superior and lateral gaze, (+) marks the presence of
diplopia.

RESULTS

The average age of the patients operated is 59 years, (be-
tween 51 and 72) - three women and a man. The period
marking the beginning of the disease until hospitalization is
between 5 and 12 months (8.75 in average). For first sign of
the disease we accept the moment in which the patient real-
izes the presence of a problem and seeks medical help. In
tree of the cases the process engages the right lacrimal
gland, and in one case -- the left. The imaging studies in-
clude mainly CT, and in one case MRI. In all four cases we
determine well limited tumor formations with benign CT
characteristics, with no data for infiltration of the surround-
ing structures. The preoperative exam shows marked
proptosis in all 4 patients. The diplopia was analyzed as
anamnestic data and at the same time a clinical exam was
conducted for the discovery of hidden diplopia. The
anamnesis accentuated on the occurrence of double vision in
everyday duties. The result from the clinical examination
showed manifested diplopia in all 4 patients. The operative
treatment in all four cases included total extirpation of the
tumor. This was conducted through lateral orbitotomy where
the access was secured with a coronal approach. Tab. 2
shows the dimensions of the tumor in each case. The size of
the tumor after removal varies between 8 cm³ and 21 cm³.
The postoperative treatment includes observation by an
ophthalmologist and a maxillofacial surgeon and, in the
case № 2 – a hematologist to determine the postoperative
treatment concerning the leading disease. The surgical
treatment was thorough in the other 3 cases. The postope-
rateve observation was between 18 and 114 months (57.75
months average). During the whole period of observation
no sign for reocurrence of the disease was found in all four
cases.

DISCUSSION

The lacrimal gland is divided by the orbital septum into two
parts: palpebral which is superficial and orbital which is
deeply situated. The tumors of the lacrimal gland most of-
ten originate from the deeper part, which is the reason for
the late diagnostic, and to be accurate- the period when dis-
turbances of the eyesight appear or there is a facial asym-
metry and aesthetics (7). Most of the tumors of the lacrimal
gland are benign and from them the pleomorphic adenoma
is most frequent. The ratio is the same as with the tumors of
the salivary glands (2,4,8). Clinically they appear as well
limited, slowly growing, painless swelling, which in the be-
ginning leads to deformation of the upper external quadrant
of the orbit and as a result leads to ptosis of the upper eyelid,
exophthalmia, decreased mobility of the eyeball and
diplopia. Possible impairment of vision is common. Two of
the patients are diagnosed with these symptoms. The ma-
lignant transformation of the pleomorphic adenoma is pos-
sible in long term cases or when the excision of the tumor
was not radical enough and there have been conducted
more than one operation. Some authors recommend an op-
erative treatment by excising the tumor after diagnosing it,
excluding the biopsy (3,9). For preoperative diagnostics
fine needle biopsy can be used as minimally invasive and
informative method, enough to precise the surgical treat-
ment. In the present cases this method did not give the in-
formation required, which can be explained with the lack of
experience with the conduction of the technique and inter-
pretation of the result.

In cases of malignant tumors of the lacrimal gland the
adenocystic carcinoma is most common, followed by the
adenocarcinoma. The surgical treatment of malignant tu-
mors with such localization is still very discussible. Ac-
ccording to some authors there is no substantial difference in
the life expectancy when the capacity of the operation is in-
creased. In confirmation of this fact we give the case in
which the tumor was removed together with the orbital part
of the gland, and the result was ten years outlive and lack of
reocurrence.

Almost 25% of non-Hodgkin lymphomas are with extra
nodal localization from which 3% develop in the head and
neck region (12). The tumor is in 5-14% with orbital locali-
ization and is the most frequent primarily malignant tumor
of the orbit (13). The tumor most commonly originates
from MALT (mucosa-associated lymphoid tissue) cells or
from the germinal centers of the lymph nodules. In prin-
ciple the orbital localization of non-Hodgkin lymphoma is
distinguished by slowly growing formation in the orbital
area and the periorbital tissues. Choice of treatment is che-
motherapy and radiotherapy. Between 50 and 80% of the
patients are in total remission (14). Typical feature of the
orbital surgery when treating non-Hodgkin lymphoma is
not so much the radicalism of the operative method as the
aspiration for providing enough tissue for histological and
immunehistochemical test for the purpose of exact
typification and a following chemotherapeutic treatment
(15). In the present case the tumor was a non Hodgkin ly-
phoma connected to the gland and with a volume of 21
cm³. With the average size of the orbit around 30 cm³ this
represents around 2/3 of the capacity of the orbit (5). The
patient was in full remission for 56 months after a course of
chemotherapy. The recovery of the anatomical and func-
tional integrity of the operated orbit was complete, with no
disturbances or deficit.
CONCLUSIONS

The diagnosis and the operative treatment of the tumors of the lacrimal gland require serious knowledge of the pathology of the orbit and is subject of interdisciplinary partnership. The leading role of the ophthalmologist demands early conduction of imaging study in all cases of asymmetry in the area or deficit in the mobility of the eyeball reported by the patient or determined during examination. The interpretation of the data based on the imaging studies requires participation of specialists in orbital surgery. The decision for operative treatment should be based on a thorough analysis of the clinical and preclinical facts and should be individual. The results from the operative treatment correlate to the biology of the tumor, the level of the preoperative diagnosis, the type of the operation and the possibilities of following treatment if necessary.

REFERENCES