CASUISTRY

Is it necessary to place a surgical clamp early in the spermatic cord during testicular examination via inguinal approach?

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Abstract

Objective: The presence of tumor cells in the spermatic cord was evaluated in patients undergoing inguinal testis study in order to assure if the placement of a clamp in it was necessary to avoid tumor dissemination.

Materials and methods: Inguinal testis studies were performed over a two-year period in 38 patients diagnosed of testicular mass. The presence of tumor cells in blood vessels or lymph nodes of the cord was evaluated in all of the patients.

Results: Testicular tumors were found in 28 patients (20 seminoma, 5 mixed tumor and 3 embryonal) with an average age of 42 (range: 21–82) years. There were T1N0M0 21; T1N1M0 3; T2N0M0 2 and T2N1M0 2 cases, respectively. Independently of the stage and tumor lineage, tumor cells in the cord vessels were not observed in any of the cases through the pathology study.

Conclusion: In our causistics, it seems that the surgical act consisting of the placement of a clamp early in the cord lacks a scientific foundation. However, this study does not make it possible to state that not performing this maneuver during the surgical procedure is oncologically safe. Thus, a precedent is established to perform studies with a larger number of patients who will make it possible to corroborate this observation. This would result in less traumatic and safer surgical techniques that would allow conserving the testis and its functionality.

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PALABRAS CLAVE

Orquiectomía; Cirugía; Testículos; Neoplasia testicular; Cordón espermático

¿Resulta necesaria la colocación de una pinza quirúrgica tempranamente en el cordón espermático durante la exploración testicular por vía inguinal?

Resumen

Objetivo: Se evaluó la presencia de células tumorales en el cordón espermático en pacientes sometidos a exploración testicular inguinal, con intención de avalar si la colocación de una pinza en el mismo resulta necesaria para evitar la diseminación tumoral.

Material y métodos: Durante dos años se realizó exploración testicular inguinal a 38 pacientes con diagnóstico de masa testicular. En todos los pacientes se evaluó la presencia de células tumurales en los vasos sanguíneos o linfáticos del cordón.

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Introduction

Testicular cancer accounts for about 1% of male tumors, and it is the most common malignancy in men between 15 and 35. In the U.S.A., 8400 new cases were described in 2009.1-3 Inguinal testicular exploration, with early placement of a surgical clamp in the spermatic cord, is considered the first step required to perform orchiectomy, essential for diagnosis, local staging, and as initial treatment in these patients.4-6

In recent decades, due to the development of new diagnostic methods, the improved understanding of the tumor biology, the high probability of survival with the multimodal treatment and the growing awareness of the potential benefits of testicular preservation in terms of health and quality of life, the need for radical orchiectomy as standard procedure in all testicular tumors has been questioned.5,7-17 This question has a special interest in the pediatric age when a conservative treatment wants to be suggested.17

The aim of this paper is to show whether there are cancer cells in the spermatic cord or not during inguinal testicular examination. If so, this finding could support the generally accepted idea that early ligation of the spermatic cord prevents the suspected tumor dissemination.

Materials and methods

We performed a prospective study on 38 patients diagnosed with testicular mass, who underwent inguinal testicular exploration between June 2008 and June 2010. Before the procedure, all the patients underwent: detailed medical history, general and testicular physical examination, testicular ultrasound, tumor markers including AFP (alpha fetoprotein), β-HCG (human chorionic gonadotropin-β), LDH (lactate dehydrogenase), and chest computed tomography (CT) scan without contrast and abdominopelvic with oral and endovenous contrast.

Under general anesthesia, the patients underwent testicular exploration inguinally with early cord ligation by means of atraumatic surgical clamp performing frozen biopsy of the suspicious area. After confirming the diagnosis of malignant lesion, we proceeded to perform radical orchiectomy. We performed macroscopic and microscopic deferred pathologic examination of the surgical specimen, and the presence of tumor embolisms in lymphovascular structures of the spermatic cord was thoroughly evaluated at the different levels thereof by means of hematoxylin–eosin staining. The follow-up and subsequent treatment of the patients was performed following the parameters described in the guidelines on testicular cancer by the European Association of Urology.3

Results

All the patients underwent testicular examination inguinally. Ten patients (26.31%) were excluded from the analysis because the frozen biopsy revealed benign lesions. In the remaining 28 patients, radical orchiectomy was performed. In 16 cases, the testicle was the left one and the right one in 12. The mean age of the patients was 42 years (range: 21–82).

Three (7.89%) patients had a history of cryptorchidism and three (7.89%) of contralateral testicular cancer. Twenty (52.63%) consulted a unilateral painless indurated mass and 18 (47.37%) testicular heaviness. Three (7.89%) had increased β-HCG and three (7.89%) AFP. In 5 patients (13%), subdiaphragmatic latero-aortic adenopathies smaller than 2 cm (N1) were found. The surgical time was 52 min (range: 37–92) and the time of temporary ligation of the cord 23 min (range: 15–35).

The TNM staging of the International Union Against Cancer 2002 of the assessed patients was: T1N0M0 in 21 patients, T1N1M0 in three patients, T2N0M0 in two patients, and T2N1M0 in two patients. The tumor markers were absent in the first postoperative control in all the patients. The histological data are shown in Table 1. The pathologic assessment of the spermatic cord showed no commitment of lymphovascular structures in any case.

Of the patients with nonseminomatous germ cell tumor (NSGCT), 8 received systemic chemotherapy (SCT) and one retroperitoneal lymphadenectomy, the specimen of the resected lymph nodes being negative for neoplastic cells. Of the patients with seminomatous tumor (SGCT), 5 underwent SCT, 4 radiotherapy, and 11 active surveillance.

Discussion

Testicular cancer is a malignancy that affects young men of reproductive age, with a probability of favorable survival if diagnosed and treated early.1-3 Testicular examination
Histopathological findings of the cases with testicular cancer.

<table>
<thead>
<tr>
<th>Cell line</th>
<th>Patients</th>
<th>Histopathologic characteristics</th>
<th>n</th>
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<tr>
<td>Embryonal carcinoma (EC)</td>
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<td>TIN</td>
<td>2</td>
</tr>
<tr>
<td>Seminoma (S)</td>
<td>20/28 (18 s classical, 1 s sarcomatoid, 1 s anaplastic)</td>
<td>TIN</td>
<td>3</td>
</tr>
<tr>
<td>Mixed tumor (MT)</td>
<td>5/28</td>
<td>TIN</td>
<td>1</td>
</tr>
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LVE: lymphovascular embolism; RTI: rete testis infiltration; n: number of cases; TIN: intratubular neoplasia.

In our study, 38 patients underwent testicular examination with placement of an atraumatic surgical clamp early in the spermatic cord, of which 28 (74%) underwent orchietomy for testicular cancer. In benign lesions and stromal tumors of the testis, as well as in monorchid patients with small malignant lesion, radical orchietomy implies overtreatment, these cases being able to be treated with conservative surgery. In our series, in 10 patients (26%) the explored testicular masses were for benign lesions, consistent with the observed data in the literature.

Both in classical and conservative surgery for the treatment of testicular cancer, early atraumatic ligation of the cord is described as a safe and necessary step to prevent the spread of tumor cells away; but there is no scientific evidence to validate this surgical gesture.

In our casuistry, all the patients who underwent radical orchietomy underwent detailed pathologic examination of the spermatic cord, no lymphovascular tumor embolisms being identified at the different levels of the cord in any of the samples analyzed. This finding was therefore independent of the tumor type and the stage of the lesions.

Not only do we not know if the placement of an atraumatic surgical clamp in the spermatic cord is oncologically safe, but it also seems that this gesture may have functional implications in the patients who retain the gonad. Studies with animals show that the cord clamp in rats produces histological changes in body temperature and leads to irreversible histological changes (testicular parenchyma necrosis) the longer the ischemia time is. Patterns of testicular ischemia have also been established after testicular torsion in rats.

The loss of testicular parenchyma has potentially negative long-term consequences in the exocrine and endocrine function of the gonad, and it appears to be related with ischemia associated with temporary ligation of the cord, one of the possible causes of this condition. For this reason, some experts now refrain from using clamps occluding the cord, because the benefits that this surgical step offers have never been appropriately tested. Not performing it seems especially reasonable when preservation of testicular function in patients with germ cell tumor in a solitary testis is carried out. Taking into account the increasingly frequent use of conservative techniques to treat testicular injury, the need to reduce the traumatic events during surgery raises new questions.

In short, the classic surgical gesture consisting of early cord clamping has no scientific basis. However, as we cannot claim that not performing it is oncologically safe either, it is worthwhile to establish the unknown factor and carry out studies with a larger number of patients to respond to this question, which possibly results in defining safe and less traumatic surgical techniques that make it possible to preserve the testis and its functionality.

Conflict of interest

The authors declare that they have no conflict of interest.

References