



## Oncology

# Tuberculous epididymo-orchitis secondary to Bacillus Calmette-Guérin (BCG) in non-muscular invasive bladder cancer

Luis Felipe Lara Moscoloni<sup>\*</sup>, Maximiliano Santarelli, Juan Spagnuolo

Hospital Complejo Medico Churruca – Visca, Buenos Aires, Argentina



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## ABSTRACT

Intravesical BCG therapy is effective in treating bladder cancer. Tuberculous epididymo-orchitis presents as a rare complication. There are very few cases described in which Mycobacterium Bovis produces epididymo-orchitis by itself.

## Introduction

Bacillus Calmette Guérin (BCG) was approved by the Food and Drug Administration (FDA) in 1990, it's a live attenuated vaccine derived from Mycobacterium Bovis.<sup>1</sup> Actually supported as first-line adjuvant intravesical immunotherapy for the treatment and prevention of transitional cell carcinoma of the bladder and carcinoma in situ after transurethral resection of the bladder. The use of BCG in clinical practice has been shown to reduce recurrence rates and to delay the time to first recurrence compared to transurethral resection as monotherapy.

Complications must be known and noticed by physicians, fever is presents in 2.9% of patients, followed by hematuria 1.0%, granulomatous prostatitis 0.9%, arthralgias 0.5%, and epididymitis 0.4%. The most feared complication is sepsis secondary to hypersensitivity observed in 1 in 15,000 patients treated with intravesical BCG.<sup>2</sup>

## Case report

An 82-year-old man with a history of arterial hypertension, dyslipidaemia, active smoker (15 p/y), diagnosed with non-muscle invasive bladder cancer; High-grade T1 in 2017, who submitted six weeks induction of intravesical immunotherapy with BCG, and five cycles of three weeks maintenance. All cystoscopic controls during the follow up were normal.

After 2 months of the last instillation of BCG, he has consulted at the emergency room for enlargement and left testicular pain; denying discharge from urethra. Physical examination showed left scrotal enlargement, painful on palpation. Right testicle was normal on

palpation, without pain.

Ultrasound reports in the left testicle an anechoic image of 2 × 2 mm. In tail of epididymis heterogeneous image of 16 × 15 mm and mild hydrocele; Right testicle without obvious pathology and positive bilateral Doppler. Routine laboratory studies of blood and urine were negative as well as tumor markers.

Clinical findings were interpreted as epididymo-orchitis and fluoroquinolones was administered with no improvement of symptoms after treatment. In the following days, he referred having an intermittent fever.

In urological control a magnetic resonance imaging was performed that reported that the head and body of the left epididymis with heterogeneous soft tissue formation and multilobed contours that displaced the left testicle. Solid left extra testicular cystic nodule with intense peripheral staining. ADC signal drop with primitive origin of epididymis [Figs. 1–3].

Left radical orchiectomy was fulfilled, showing an important fibrotic process in surgical planes. The delayed pathological study revealed the indurated ependymal border under microscopy. On the tail of the epididymis, homogeneous whitish tumor formation. And microscopy the epididymis and testicular parenchyma with numerous necrotizing tuberculoid-type granulomas with central necrosis.

Subsequently, chest tomography did not show pathological findings and the urine culture for mycobacteria did not obtain microbial development.

The clinical presentation was interpreted as epididymo-orchitis secondary to instillation by BCG, and Intravesical Immunotherapy was suspended. In a multidisciplinary decision the patient started treatment

<sup>\*</sup> Corresponding author.

E-mail address: [luisfelipelaram@gmail.com](mailto:luisfelipelaram@gmail.com) (L.F. Lara Moscoloni).

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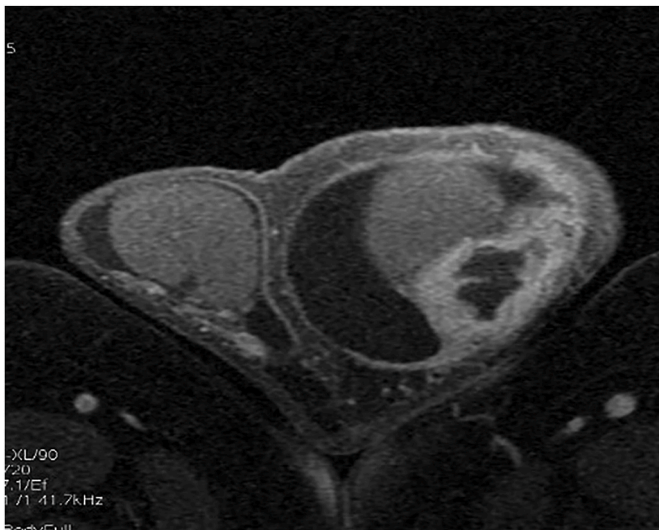
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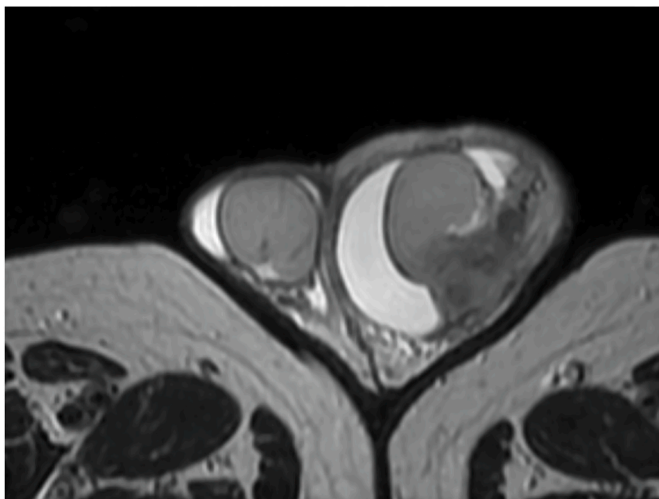
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**Fig. 1.** T1 sequence: Contrast uptake in the left testicle with heterogeneous enhancement.



**Fig. 2.** T2 sequence: Left testes presents a heterogeneous density image with hypointense foci and irregular borders.

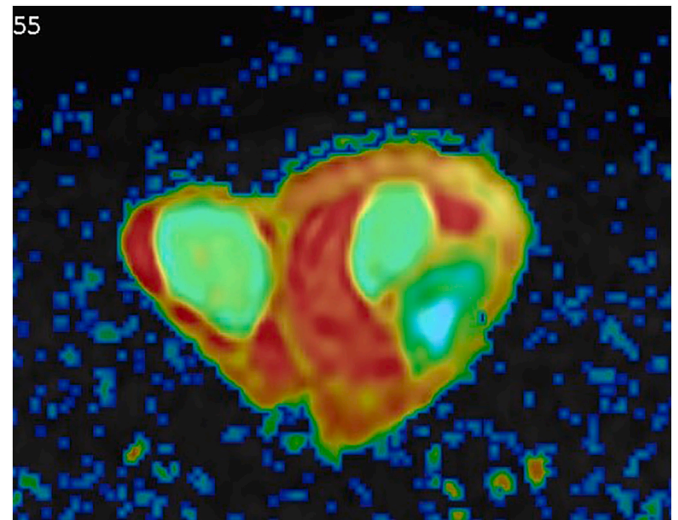
with Isoniazid, Ethambutol, Pyridoxine and Rifampicin according to infectologist medical indication.

The patient showed a marked decrease in symptoms in the weeks after treatment, continuing with normal cystoscopic controls.

### Discussion

Since the use of BCG in bladder cancer adverse effects have been highly variable, from myalgia and pyrexia to sepsis; epididymo-orchitis secondary to instillation by BCG is an infrequent complication in which early diagnosis and proper treatment with a combination of antituberculous therapy is very important.<sup>3</sup>

Image patterns in tuberculous epididymo-orchitis have been described as a diffuse hypoechoic, homogeneous or heterogeneous magnification, in association with nodes, but it depends largely on the



**Fig. 3.** Perfusion Sequence: Increased vascularity in the area of the left testicle (Green). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

experience of the operator in the differential diagnosis, so the infrequency of this complication makes it difficult to diagnose by this method.

In the topic of laboratory studies, the positivity of urine culture is 41% in cases of tuberculous orchitis, but it depends on multiple factors such as the number of microorganisms present in the sample and the culture taking technique.<sup>4</sup>

In this particular case, testicular exploration and orchiectomy was realized as a therapeutic and diagnostic procedure. The literature suggests that an orchiectomy is performed if there is abscess formation in the testicle; otherwise, tuberculosis therapy should be enough.<sup>5</sup> However, with the criteria of treating a possible malignancy and due to the increase in symptoms in the patient, the surgical decision was made.

To conclude, strict multidisciplinary management is useful in these cases and knowledge of the possible complications associated with bladder immunotherapy should be suspected, especially in those patients in whom there is no effective response to first-line treatments, in this case, tuberculous epididymo - orchitis is a rare but treatable complication that must be taken into account as a differential diagnosis.

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