

Review of Urological Complications in BCG Immunotherapy for Non-muscle Invasive Bladder Cancer

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DESCRIPTION

Intravesical immunotherapy with BCG for the treatment of non-muscle invasive bladder cancer is used routinely, urological complications can be variable from self-limited to some that can put the patient's life at risk, in addition, the complications can develop immediately after instillation or years after the end of treatment. India 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*.

Is the standard treatment for intravesical immunotherapy for non-muscle invasive bladder cancer. Its use is very common in urologists [1].

Its immune mechanism is not yet clear, but it is proposed that the mechanisms involve the binding of BCG to cancer cells in the bladder, followed by secretion of cytokines and chemokines; presentation of BCG or cancer cell antigens by phagocytes to T helper cells; A sequence of cell surface interactions is required including CD4, T cell receptor and antigen, class II Major Histocompatibility Complex (MHC) antigen, Lymphocyte Function Antigen 1 (LFA-1), CD28, CD80 and Intercellular Adhesion Molecule 1 (ICAM-1) [2,4].

Its use in clinical practice has been shown to reduce recurrence rates and delay the time to first recurrence compared to transurethral resection alone [5].

UROLOGICAL COMPLICATIONS

There are a wide variety of urological complications after intravesical BCG instillation that should be known by professionals because they can help with a rapid diagnosis and timely treatment.

The appearance of these complications is considered one of the main causes of poor compliance with BCG therapy. Lamm reports that only 16% of patients with maintenance BCG were able to receive all instillations of the 3-year immunotherapy, mainly due to adverse events [6].

In a report from the European Organization for Research and Treatment of Cancer (EORTC), 19% of patients who accepted intravesical BCG had to discontinue treatment due to complications

and 29% completed 3-year immunotherapy [7].

Irritative symptoms are generally self-limited and occur in a large number of patients who undergo intravesical immunotherapy; it should be taken into account that if symptoms persist, a doctor should be consulted [8].

Hematuria (1%) is produced by the invasion of BCG in the depth of the bladder wall, which would increase the risk of infection if there is contaminated urine [9].

Urinary tract infection and prostatitis (0.9%) can present due to concomitant urinary infection.

Epididymo-orchitis (0.4%) is very rare, so the greatest amount of information about the patient should be recruited to suspect this diagnosis [10].

Bladder contracture (0.1%) is severe. Decreased bladder capacity worsens in patients and makes them intolerant to BCG administration [11].

Tuberculous-type ulcers (<0.1%) in the bladder are associated with persistent BCG infections with large inflammatory lesions [12].

Granulomas on the penis (0.1%) are very rare, but can be caused due to flaws in the BCG application technique [13].

Ureteral obstruction (<0.1%) is an uncommon complication; it is generally transient and self-limiting after the completion of BCG therapy, but if it persists, it is necessary to drain the urinary tract with the placement of a nephrostomy [14].

Renal tuberculosis (<0.1%) can occur regardless of the presence or absence of vesicoureteral reflux [15,16] and retroperitoneal abscess (<0.1%) can be life-threatening.

CONCLUSION

The use of BCG and its urological complications, even though they are serious and infrequent, should be known to doctors. It is necessary to individualize each patient and study their medical history in detail when a complication is suspected after intravesical immunotherapy.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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