

BLADDER CANCER IMMUNOTHERAPY

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IMMUNOTHERAPY is the use of medicines to help a person's own immune system recognize and destroy cancer cells.

Immunotherapy for Early Stage Bladder Cancer

- BCG is a type of bacteria related to the one that causes tuberculosis. While it doesn't usually cause a person to get sick, it can help trigger an immune response.
- BCG can be put directly into the bladder (as a liquid) through a catheter. This activates immune system cells in the bladder, which in turn can attack bladder cancer cells.
- For some early-stage cancers, BCG can be used after transurethral resection of bladder tumor (TURBT) to help keep the cancer from coming back.
- BCG treatment is usually done by your urologist, is started a few weeks after a TURBT and is given once a week for 6 weeks. Sometimes long-term maintenance BCG therapy is given.
- Treatment with BCG can cause symptoms that feel like having the flu, such as fever, chills, and fatigue. It can also cause a burning feeling in the bladder. Rarely, BCG can spread through the body, leading to a serious infection. One sign of this can be a high fever that isn't helped by aspirin or similar medicines.

Immunotherapy for Locally Advanced or Metastatic Bladder Cancer

- A new class of drugs called Immune checkpoint inhibitors (for advanced cancers) target the PD-L1 and PD-1 (Programmed Death-Ligand) on the cancer cell. Under normal conditions, PD-L1 and PD-1 tell the immune system not to kill the cell. Bladder tumors have higher levels of PD-L1 which allows cancer cells to "hide" from the host immune system. Immune checkpoint inhibitor drugs bind to PD-L1 and PD-1 and essentially tell the immune system to attack the cancer cells.

Currently three PD-L1 inhibitors are clinically available including atezolizumab (Tecentriq), avelumab (Bavencio), and durvalumab (Imfinzi).

- Tecentriq: IV 1200 mg (flat dose) once every 3 weeks over 60 minutes.
- Bavencio: IV 10 mg/kg once every 2 weeks over 60 minutes.
- Imfinzi: IV 10 mg/kg once every 2 weeks over 60 minutes.

Currently two PD-1 inhibitors are clinically available including nivolumab (Opdivo) and pembrolizumab (Keytruda). They block a signal that would have prevented activated T cells from attacking the cancer, thus allowing the immune system to clear the cancer.

- Opdivo: IV 240 mg (flat dose) once every 2 weeks over 60 minutes.
- Keytruda: IV: 200 mg (flat dose) once every 3 weeks over 30 minutes.

Side Effects: Common side effects of these drugs include fatigue, nausea, loss of appetite, fever, urinary tract infections, rash, diarrhea, and constipation.

Less often, more serious side effects can occur. These drugs work by basically removing the brakes on the body's immune system. Sometimes the immune system starts attacking other parts of the body, which can

cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, or other organs.

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