

Lutetium-177 PSMA Therapy

Lutetium-177 PSMA Therapy, also called Prostate-Specific Membrane Antigen Therapy, is becoming a popular treatment choice for men experiencing advanced prostate cancer with metastatic or treatment-resistant prostate tumors. In many patients, the treatment has proven to be a successful way to reduce the size of the tumors. Men who have undergone radical prostatectomy or primary radiotherapy but show symptoms of metastatic recurrence may find Lutetium-177 PSMA Therapy a viable treatment option. The therapy has proved effective at reducing the size of tumors while also stopping them from multiplying. The therapy has not yet been tested in randomized clinical trials and is not yet part of routine clinical care; yet in many patients, the therapy has been able to achieve long-term remission.

What Causes Prostate Cancer?

Prostate cancer is the most common form of cancer in men over the age of 50. Currently, researchers are unable to determine exactly what causes prostate cancer. DNA changes that are inherited or caused by certain lifestyle choices are believed to play a role in why some individuals develop cancer and others do not. It is believed that inherited genes account for about 5 to 10 percent of prostate cancers. Exposure to radiation, chronic inflammation, exposure to cancer-causing chemicals, high levels of androgens, or insulin-like growth factor-1 (IGF-1) are also all believed to cause gene changes which lead to cancer.

Prostate Cancer Implications

When caught early, prostate cancer treatments are usually highly successful. However, once metastasis has developed the disease prognosis changes dramatically.

Advanced prostate cancer may cause:

- Urinary dysfunction
- Erectile dysfunction
- Loss of fertility
- Bowel dysfunction
- Pain as a result of bone metastasis
- Compromised organ function

Lutetium-177 therapy at Sheba- Who is Eligible?

The Lutetium-177 PSMA Therapy combines therapy with diagnostics. The approach is referred to as 'theranostic'. The Sheba Medical Center is one of the few medical centers in the world to offer such a progressive cancer treatment option to patients with advanced and metastatic prostate cancer.

Most types of prostate cancers express high levels of PSMA. Rarely, about 5 to 10 percent of prostate cancers do not create PSMA. Prior to starting Lutetium-177 PSMA therapy, a diagnostic scan will be performed (Ga-68 PSMA PET CT) to ensure that the therapy's radiation will target the right areas during treatment.

How Does Lutetium-177 PSMA Therapy Work?

PSMA is a type of protein expressed on the membrane of prostate cells, that is believed to have numerous cellular functions. Although the epithelium of the prostate naturally creates very low levels of PSMA, cancerous prostate tumors prostate extremely high levels (often 1,000 times higher than a normal prostate cell). If prostate cancer has metastasized to other areas of the body the PSMA will be detectable in those areas. Lutetium is a radiation-based treatment that utilizes a molecule to attach itself to the PSMA receptors located on the cancer cells. Lutetium-177 emits beta radiation that effectively damages cancer cells and, over time, destroys them. By targeting the molecules of PSMA, the radiation-focused treatment by Lutetium becomes very precise as the Lutetium molecule binds with the PSMA. The act of targeting the cancer cells is often referred to as, 'Peptide Receptor Radionuclide Therapy (PRRT).

Is This Treatment Safe?

The radiation used in the Lutetium-177 is designed to only destroy the cancer cells. With theranostic, treatment becomes more personalized so that cancer and its metastasis are effectively pinpointed but the whole body is never exposed to the radiation. Only the cancer cells are irradiated and destroyed. Blood tests will be performed to make sure that the radiation is not damaging healthy tissues.



Tel: +972-3530-3100

Fax: +972-3530-8040

Imaging tests are also performed to ensure that the radioactive material at the tumor sites has been correctly absorbed.

Side effects of the therapy may include:

- Dry mouth
- Tiredness
- A brief decline in production of blood cells

When Would I Consider Using this Treatment?

Lutetium-177 therapy is only used on men who suffer from cancer that has originated in the prostate and who have exhausted other previous lines of treatment. It has proven itself to be an effective therapy for managing metastatic prostate cancer or cancer of the prostate after other types of treatment have failed.

Nearly all types of prostate cancer will produce excessive PSMA, however, prior to starting the therapy, a diagnostic scan is performed (Ga-68 PSMA PET CT) to ensure the Lutetium-177 radiation will target the right areas during treatment.

Who is the Sheba Doctor That Administers the Treatment?

[Dr. Meital Levartovsky](#) is a senior oncologist in GU Unit at the Cancer Center in Sheba.

The treatment itself will be given in the radio-isotope unit at the Sheba medical center. This is a state-of-the-art facility that masters all aspects of radio-nuclide diagnostics and therapeutics.