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Brachytherapy of Acute and Sub-Acute Side effects and its Medical Uses

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INTRODUCTION

A sealed radiation source is positioned inside or close to the area that has to be treated in brachytherapy, a type of radiation therapy. Brachytherapy is frequently used as a successful treatment for cancers of the skin, breast, oesophagus, prostate, cervix and other organs. It can also be used to treat tumours in many other parts of the body. Brachytherapy has been shown to have cancer-cure rates that are either on par with surgery and External Beam Radiation Therapy (EBRT) or even higher when combined with these treatments, according to treatment outcomes. Surgery, EBRT and chemotherapy are just a few examples of various treatments that can be used with brachytherapy. Brachytherapy is in contrast to unsealed source radiation, which involves injecting a radioisotope into the body to chemically localise to the tissue that has to be destroyed. Additionally, it differs from External Beam Radiation Therapy (EBRT), in which the tumour is exposed to high-energy x-rays from outside the body (or, in rare cases, gamma rays from a radioisotope like cobalt-60).

Instead, brachytherapy entails carefully positioning short-range radiation sources (radioisotopes, such as iodine-125 or cesium-131) to the location of the malignant tumour. These are covered in a protective wire or capsule that lets ionising radiation treat and kill nearby tissue but stops the radioisotope charge from migrating or dissolving in bodily fluids. Depending on the radioisotope, the capsule may either be removed afterwards or left in place.

DESCRIPTION

Medical Uses

Cervical, breast, skin and prostate cancers are frequently treated using brachytherapy. Brachytherapy permits a high radiation dose to be delivered to a restricted area since the radiation sources may be positioned precisely at the cancer treatment site. Additionally, because the radiation sources are positioned inside or close to the target tumour, they remain in alignment with the tumour even when the patient moves or the tumour travels elsewhere in the body. As a result, the radiation sources continue to be precisely targeted. By ensuring that the entire tumour receives the optimum dose of radiation, physicians are able to achieve a high level of dose conformity. Additionally, it lessens the potential of harming healthy tissue, organs or structures close to the tumour, increasing the likelihood of healing and maintaining organ function.

Acute and Sub-Acute Side Effects

The location of the tumour being treated, as well as the kind of brachytherapy being utilised, determine the likelihood and nature of any potential acute, subacute or long-term side effects.

Acute: Localised bruising, swelling, bleeding, discharge or soreness within the implanted location are some of the acute adverse effects of brachytherapy. These often go away a few days after the end of the treatment. After therapy, patients could experience temporary fatigue.

Brachytherapy for prostate or cervical cancer can induce painful urination (dysuria), urine retention or other acute and

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temporary urinary symptoms. Additionally possible symptoms include momentary increased stool frequency, diarrhoea, constipation or slight rectal bleeding. The majority of acute and subacute adverse effects go away within a few days or weeks. There is a little possibility that some seeds used in permanent (seed) brachytherapy for prostate cancer could leave the treatment area and move into the bladder or urethra before passing through the urine.

In the weeks after treatment, which usually heals in 5-8 weeks, brachytherapy for skin cancer may cause a shedding of the outer layers of skin (desquamation) at the area of treatment. If the tumour is on the lip, brachytherapy may cause ulceration, but this normally goes away after 4-6 weeks.

Sub-acute: Brachytherapy may have long-term negative effects in a small percentage of patients due to disturbance or injury to nearby tissues or organs. Most long-term negative effects are mild to moderate in intensity. For instance, brachytherapy for cervical or prostate cancer may result in persistent gastrointestinal and urinary issues that may need continuing care.

CONCLUSION

About 15%-30% of men receiving brachytherapy for prostate cancer may also experience erectile dysfunction. However, the likelihood of erectile dysfunction is correlated with both the amount of erectile function before to undergoing brachytherapy and age (older men are at a higher risk than younger men). Most occurrences of erectile dysfunction in patients can be successfully treated with medications like viagra. Importantly, brachytherapy carries a lower risk of erectile dysfunction than radical prostatectomy.