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Teaching Lecture: Underestimated importance of Intraluminal brachytherapy: bronchus, oesophageal, anorectal and hepatobiliary duct cancer

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SP-0184

Underestimated importance of Intraluminal brachytherapy: bronchus, oesophageal, anorectal and hepatobiliary duct cancer

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Intraluminal brachytherapy is still an important part of brachytherapy procedures done especially in palliative patients. But large differences between countries over the world are observed. It is not clear how the future of intraluminal brachytherapy will look like. Brachytherapy is one of the most efficient methods in overcoming difficulties in breathing that is caused by endobronchial obstruction in palliative treatment of bronchus cancer. Depending on the location of the lesion in some cases brachytherapy is a treatment of choice. Because of uncontrolled local or recurrent disease, patients may have significant symptoms such as: cough, dyspnea, haemoptysis, obstructive pneumonia or atelectasis. Efforts to relieve this obstructive process are worthwhile, because patients may experience improved quality of their life. Brachytherapy plays a limited but specific role in definitive treatment with curative intent in selected cases of early endobronchial disease as well as in the postoperative treatment of small residual peribronchial disease. Various methods of palliation have been used in an attempt to improve patients' quality of life and to provide near normal, if not normal, swallowing until death occurs because of progressive esophageal cancer. Endoesophageal brachytherapy makes it possible to use high doses of radiation to the tumor itself with concurrent protection of adjoining healthy tissues due to the rapid fall in the dose with the square of the distance from the center of the dose. The above treatment also leads to a smaller proportion of late radiation complications. The aim of palliative brachytherapy is to reduce dysphagia, diminish pain and bleeding, and to improve the patient's well-being. Palliative treatment options for bile duct cancer or pancreas cancer remain limited due to the large number of patients with advanced disease at the time of diagnosis. Radical surgery is possible in less than 10-15% of these cases. Unrespectable bile duct or pancreas cancers are very difficult to treat with external beam therapy alone due to the proximity of adjacent normal organs and the high doses required to effectively irradiating these neoplasms. Although the results available in the literature are somewhat contradictory as regards the possible use of intraluminal brachytherapy in a curative setting, some evidence indicates that intraluminal brachytherapy can add something to the treatment of unresectable extrahepatic bile duct and pancreatic cancers if a proper subset of patients is identified and a rational and aggressive scheme of multimodality treatment is designed. High rate of advanced cases affects the enrollment of brachytherapy (BT) into treatment of bile duct cancers. Indications for brachytherapy include all malignant strictures of the bile duct which can be cannulated. Intraluminal brachytherapy (ILBT) is an important component in the multimodality approach to bile duct cancers. The objective of this treatment is to deliver a high local dose of radiation to the tumor while sparing surrounding healthy tissues. The treatment can be safely adapted for right and left hepatic duct as well as for common bile duct lesions. The standard of care in rectal cancer is still surgery. For limited size rectal cancer (T1, small T2), brachytherapy alone offers an alternative to radical surgery and leads to excellent results without major morbidity. In advanced rectal cancer, a proportion of patients can achieve complete clinical response after external beam chemoradiotherapy (EBCRT) that can be demonstrated on MRI after neoadjuvant treatment. Chosen summarized indications, treatment schedules, results and complications are discussed in the following presentation.

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Teaching Lecture: Big data in radiotherapy: technology, challenges and opportunities

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Big data in radiotherapy: technology, challenges and opportunities

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Big data is a buzzword. But what is Big Data? And what can we do with Big Data in radiotherapy?

In this teaching lecture we will discuss what Big Data is and what kind of data a modern radiotherapy center produces. Innovative technology to extract, store and process these Big Data are becoming available and will be discussed.

Big Data is often seen as tremendously promising and is predicted to change health care radically, but at this point in time is mostly a challenge as we keep accumulating data without a clear path to clinical applications while privacy concerns are on the rise. Methods and examples how we go from data to making a difference in lives of cancer patients will be presented. As will the methods to do this in a way that preserves the privacy of patients.

Finally the future of Big Data is drawn and the case will be made that more data is not always the answer if we do not have a Big Machine ready to learn from these data.

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Teaching Lecture: The role of dosimetry audit in safety, quality and best practice for external beam and brachytherapy

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The role of dosimetry audit in safety, quality and best practice for external beam and brachytherapy

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Joint abstract submitted

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The role of dosimetry audit in safety, quality and best practice for external beam and brachytherapy

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Independent dosimetry audit is an essential component of best practice radiotherapy. However the value and concepts are not always fully understood. This lecture will review the methods and approaches of dosimetry audit and discuss its clinical importance. Examples will be given from a range of previously completed audits as well as considering what is needed in the role of audit in the implementation of new technologies.

Drawing on experience from both external beam and brachytherapy dosimetry audits worldwide, we will review the key elements of audit design, implementation and analysis, including: choice of phantoms and detectors, remote or on-site visits, efficiency and efficacy of the audit methodology, and reporting and feedback considerations.

The learning outcomes of this teaching lecture are:

- to understand why audit can improve safety, quality and best practice radiotherapy;
- to know how to choose appropriate methodology for audit and understand the outcomes;
- to appreciate the scientific, philosophical and legal reasoning for dosimetry audit.