



GOOD SCIENCE
BETTER MEDICINE
BEST PRACTICE

ESMO Clinical Unit Visit Report

Host institute:

Humanitas Research Hospital, Milan, Italy

Home institute:

All India Institute of Medical Sciences, New Delhi, India

Fellowship dates:

25 September – 6 November 2019

Project title:

Stereotactic Body Radiotherapy (SBRT) in the management of Gastro-Intestinal Cancers



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Host mentors: Prof. Ciro Franzese and Prof. Marta Scorsetti
Humanitas Research Hospital, Milan, Italy

Home mentors: Prof. G. K. Rath and Prof. Suman Bhasker
All India Institute of Medical Sciences, New Delhi, India

Introduction and purpose of the Clinical Unit Visit

Historically radiotherapy was used in palliative settings for metastatic liver or unresectable pancreatic disease. With the emergence of more sophisticated treatments like Stereotactic body radiation therapy (SBRT) and image guidance (IGRT) high dose ablative radiation can be delivered to the target lesions with sparing of surrounding normal tissues. Although the SBRT treatment is highly effective with high therapeutic ratio it is mandatory to deliver it in a precise manner with the possibility to achieve high rates of local control and potential survival benefit in different settings (e.g. metastatic colorectal cancer).

The purpose of this Clinical Unit Visit was to learn the principles and practices of SBRT for Gastro-intestinal (GI) malignancies. Radiotherapy and radiosurgery department of Humanitas Hospital who treat about 200 liver metastases, 60 hepatocellular carcinoma and more than 100 pancreatic cancer every year with SBRT. The center has several on-going prospective phase II and III trials investigating the role of radiosurgery and SBRT in GI primary tumours and metastases.

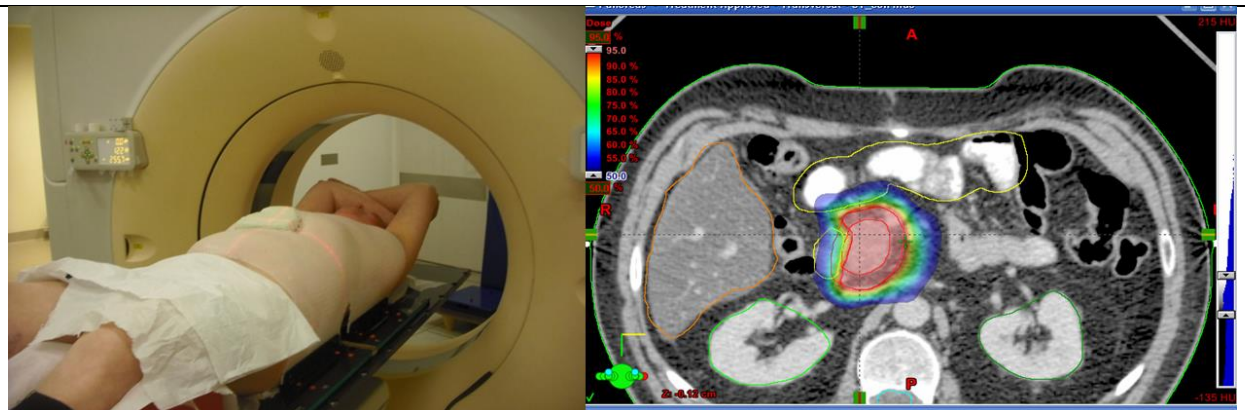


Figure: Patient simulation with abdominal compression and thermoplastic mask (left side) and treatment plan with dose colour-wash for pancreatic cancer (right side)

Six-week timetable

- **Patient selection-** I observed with my host supervisor the management policies of gastro-intestinal tumors with SBRT technique. I observed the initial patient evaluation in the clinic including discussion with the patient and other physician about the goals and time course of treatment, expected benefits and potential short term and long-term side effects from the treatment.
- **Immobilisation and simulation-** I learned the immobilisation process, the acquisition of planning simulation scans, acquisition of 4D-CT scan, triple phase CT scan and respiratory motion management.
- **Contouring of target and Organ at risk (OARs):** I have learnt about delineation of target volumes; ITV based contouring and use of MR/PET scan fusion in improved segmentation.
- **Radiation dose prescription:** I have come across the different treatment protocols based on the size, number, location of the tumors of pancreato-biliary system at Humanitas Hospital.
- **SBRT planning and beam placement :** I have observed radiation planning with physicists which is in most cases Volumetric modulated arc therapy (VMRT) and got an insight about the institutional constrains which they have made based on their large experience on SBRT.
- **Plan Evaluation :** Plan evaluation process is being taught and how to achieve an optimal therapeutic ratio based on target volume and OAR dosing.
- **Treatment delivery:** I have seen different methods of radiotherapy plan execution including Brain lab system, Optical surface monitoring system (OSMS) and Calypso.
- **Monitoring during treatment and follow-up:** I also visited patients for the weekly status checks and learned to explain and manage the acute morbidities of treatment. I saw patients coming for long term follow up.
- **Ongoing departmental studies:** I was able to observe some ongoing projects namely-
Ph-II study of SBRT after induction chemotherapy for locally advanced pancreatic cancer
Ph-II study of liver oligometastasis from breast cancer
Ph-III study of SBRT versus MW ablation for liver metastases
- I have attended multi-disciplinary tumor boards and involved myself in discussion with the residents, fellows and other physicians.
- My mentor facilitated me in attending a 3-days Advanced radiotherapy technology course in which the latest advancement and new technologies were discussed and I also got an opportunity to interact with international colleagues from various countries.
- I have interacted with clinical data manager at Humanitas and come to know about various ongoing

projects in department and some international multi-institutional trials. I gained some insight regarding how to conduct RCTs and data management for the trials.

- The humanitas work environment is very friendly, I got an opportunity to interact with other Radiation Specialists and got to learn from their experience e.g. Accelerated breast partial irradiation (APBI) with E, Single shot RT in prostate cancers, Lung SBRT, Radiotherapy for mesothelioma, Stereotactic Radiosurgery for recurrent brain gliomas, use of brain lab system for brain tumors.

Expected transferable skills on return to home institute

We have facilities of practicing SBRT for Gastro-intestinal malignancies at our centre and by acquiring the skills, I can practise at our centre. I will formulate written protocols for the practice of SBRT on my return and this would benefit my department colleagues too in practising this technique. Humanitas have a long experience of practising SBRT with long term published follow-up data. Learning from their experience, we could provide a quality care back home. The ESMO-CUV fellowship provides networking opportunity and international collaboration for future research.

Conclusion and acknowledgements

SBRT is a state of art technology able to deliver ablative doses to the target lesions. SBRT for GI cancers is technically challenging but when delivered precisely leads to excellent treatment outcomes. The techniques learnt at Humanitas will help strengthen the SBRT programme at my home institute.

I am grateful to the European Society for Medical Oncology (ESMO) for this fellowship, as because of this fellowship grant young oncologist from developing countries are able to learn at an international centre of excellence. I am thankful to Prof. Ciro Franzese and Prof. Marta Scorsetti for giving me the opportunity, access to hands on training for my fellowship and taking extra effort for my advanced oncology training course. All the departmental colleagues were very helpful and friendly in sharing knowledge. I want to expand my gratitude for my home mentors Prof. G. K. Rath and Prof. Suman Bhasker for their generous support in my endeavours.



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