Acute and Late Toxicity of Hypofractionated Radiotherapy for localized prostate cancer: IMRT vs Helical Tomotherapy

A. Rese, F. Pastore, D. Toledo, F. Francomacaro, G. Ametrano, F. Cammarota, V. Iorio

Fondazione Muto ONLUS - Via Taverna Rossa, 171 – Casavatore (NA)

AIMS

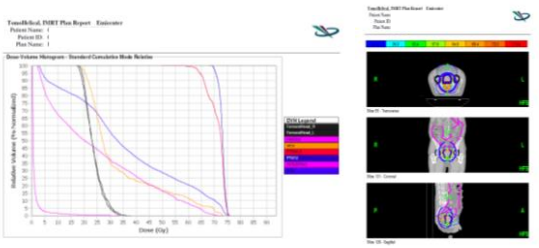
To evaluate the incidence of acute and late toxicity after hypofractionated radiotherapy using Linac intensity-modulated radiotherapy (IMRT) compared with helical Tomotherapy (HT).

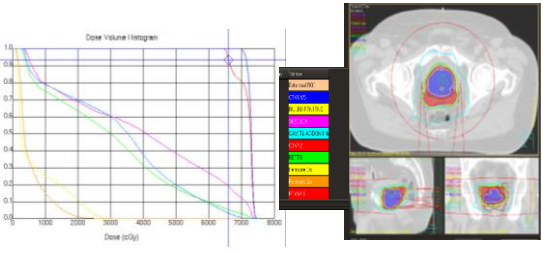
METHODS

From September 2016 to March 2018, 110 consecutive patients with localized prostate cancer (cT1-2, GS< 8, PSA<10 ng/ml) were randomized to Linac IMRT and to helical Tomotherapy. 55 patients were treated with Linac IMRT and 55 with TOMO. Patients were monitored before therapy, weekly during therapy, 2 weeks, three and six months after radiotherapy was completed, using RTOG GI and genitourinary toxicity grading scale. Patients received radiotherapy schedule according to histology reports following international guidelines. Doses were prescribed to planning target volumes (PTVs) as the followings: 72 Gy (2.4 Gy/fx) to PTV-whole prostate and 64.5 Gy (2.15 Gy/fx) to PTV-prostate and seminal vescicles in 30 fractions with SIB technique. Dose to abdominal cavity, both femoral heads, bladder and rectum were constrained below each tissue tolerance.

RESULTS

Median age of the patients was 72.5 (range 55-86 years). At the end of the treatment (6 weeks), 16/55 (29%) patients in the TOMO group vs. 19/55 (34.5%) patients in the Linac IMRT group had G1-G2 grade of GI toxicity (p=0.009), while 2/55 (4%) patients in the TOMO group vs. 4/55 (7.3%) patients in the Linac IMRT group had G3 grade of GI toxicity. 27/55 (49%) patients in the TOMO group vs. 31/55 (56%) patients in the Linac IMRT group had G1-G2 grade of GU toxicity (p=0.04), while 1/55 (1.8%) patients in the TOMO group vs. 3/55 (5.5%) patients in the Linac IMRT group had G3 grade of GU toxicity. No G4 grade of GI and GU toxicity was showed. After 6 months from the end of the treatment, no patients in the TOMO group vs. 2/55 (3.6%) patients in the Linac IMRT group had G1-G2 grade of GI toxicity, while 1/55 (1.8%) patients in the TOMO group vs. 2/55 (3.6%) patients in the Linac IMRT group had G3 grade of GU toxicity.





DISCUSSION

Acute toxicity is very low. Most of the recorded symptoms decrease over time. A small increase in mild toxicity, statistically significant, was observed in the Linac IMRT group when compared with TOMO group. Our study confirmed that Tomotherapy allows for safe moderate hypofractionation, offering a shorter overall treatment time, a lower rate of acute and late toxicities and providing potentially more economic health care.

REFERENCES

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