

STEREOTACTIC RADIOTHERAPY OF NSCLC

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Background

To evaluate the feasibility of stereotactic ablative radiotherapy (SABR) for Non-Small Cell Lung Cancer (NSCLC), especially when tumor tracking system is used.

Methods

From August 2010 to June 2019, 421 medically inoperable patients (255 male, 166 female), mean age 73, (range 50-93 years) with node-negative NSCLC were treated. CyberKnife ver. 8.5 or 10.5 and Multiplan ver. 3.2 were used. Mostly, 60 Gy in 3-5 fraction was applied for GTV (CT lung window –W2000 L700) + 3 mm margin, in case of tumor dimension smaller than 1 cm, 30-33 Gy in one fraction was delivered. XSight Lung (XLT) for real-time tumor tracking or Xsight Spine (XST) for internal target volume (ITV) were used. Volume of GTV, treatment time, toxicity, 1-year local control (LC), free survival (PFS) and 2-year overall survival (OS) were analyzed.

Results

Of the 421 patients, XLT and XST were used in 90% and 10%, respectively. Median tumor volume was 20 ml (range 1-164 ml). Mean treatment time of one fraction was 47 minutes (range 20-100 minutes). Acute toxicity was mild with no need for therapeutic intervention. One, three and five year OS were 85%, 50% and 30%, respectively. Median OS was 35 months (Female - 40 months, Male - 34 months).

Conclusion

CyberKnife's SABR of NSCLC is feasible and our image-guidance protocol allows to use high number of online tumor tracking to spare as much lung tissue as possible. This results in long survival for one third of unselected medically inoperable patients and minimal toxicity,

Keywords: SABR, CyberKnife, NSCLC