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Preliminary Experience of CyberKnife® Treatment of Lung Metastasis: The Question about Real Clinical Benefit

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Abstract

Objective: Evaluate the effectiveness of radiotherapy plan and physical parameters including local tumor response and clinical outcome of lung metastasis in patients who received CyberKnife® treatment at Ramathibodi Hospital.

Material and Method: Six cases with twenty lesions of lung metastasis patients were evaluated for tumor response after having received CyberKnife® treatment. The prescribed radiation dose was calculated approximately to biological equivalent dose (BED) around 60 to100 gray (Gy10). The response of each lesion to treatment was evaluated from roentgenographic study during follow-up period along with adverse event, status of patients, and disease.

Results: At the third month after treatment, roentgenographic partial response (PR, 50% decrease in size) was demonstrated in eight lesions and stable disease (SD, unchanged size) in eight lesions with no complete response (CR, disappearance of tumor) detected. Progressive disease (PD, 25% increase in size) of six treated lesions was detected during the follow-up period. At the time of report, two patients were alive and still received palliative chemotherapy, two patients died from uncontrolled progressive metastases and failed palliative chemotherapy, and two patients lost follow-up after progressive metastases with unknown surviving status. No severe adverse event was observed. The treatment planning parameters demonstrated borderline of radiation dose homogeneity, and conformality coverage of the target volume.

Conclusion: This preliminary report aimed to provide the idea of choosing the appropriate lung metastasis patient to receive CyberKnife® treatment that must strictly clarify the real clinical benefit of each selected case to achieve the best outcome from this special treatment procedure.

Keywords: CyberKnife®, Stereotactic body radiotherapy, Lung metastasis

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