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研究速報

## Prognostic Value of Measurements of Neck Nodes Before and After Radiotherapy

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## 放射線治療前後における頸部リンパ節計測の予後的意義

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### Introduction

In order to obtain a successful outcome of radiotherapy, extensive efforts have been paid to search prognostic parameters for an accurate prediction of prognosis. In this study, the tumor sizes measured both before and after the treatment were comparatively evaluated if they could be used for predicting curability.

### Methods and Materials

The material comprised 81 patients with squamous cell carcinomas of the head and neck eligible for a minimum two-year follow-up evaluation. All of them were treated four times per week with a  $^{60}\text{Co}$  unit. Measurements of the major and minor axes were made on neck node metastases before, during and after treatment. The tumor volume was calculated from  $V=4/3\pi ab^2$  where  $a$  and  $b$  are the radii of the major and minor axes, respectively.

### Results

When the neck nodes from the oral tongue, larynx and hypopharynx regressed to one-tenth of their initial volume by 4 weeks after radiotherapy, they had a high probability of local control (Fig. 1). The nodes from the oro- and nasopharynx appeared to have threshold volumes for reaching tumor control; those smaller than  $100\text{ cm}^3$  before radiotherapy and smaller than  $9\text{ cm}^3$  four weeks after radiotherapy had a high probability of local control (Fig. 2).

### Discussion

Several studies have reported that residual tumor correlated with a higher rate of local recurrence<sup>1)~4)</sup>, although this was not found by others<sup>5)6)</sup>. The volume-halving time has been also used for predicting recurrences<sup>1)2)</sup>. In this study, a comparative evaluation of the tumor sizes before and after the treatment has

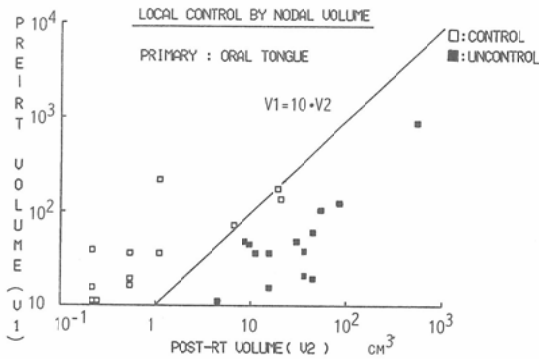


Fig. 1 On a log-log scale the volumes (V1) of the neck nodes from the oral tongue measured before radiotherapy are plotted against those (V2) measured four weeks after radiotherapy. The majority of the nodes were less than 100 cm<sup>3</sup> in their initial volumes. A comparative assessment of V1 and V2 shows that, if the tumor regressed to one-tenth of its initial volume, a high probability of local control is observed.

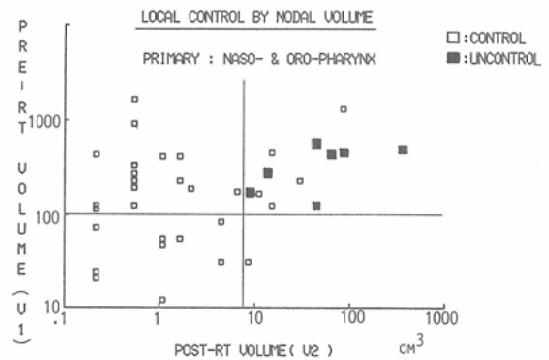


Fig. 2 A scattergram for neck node metastases from the tumors of the oro- and nasopharynx. A higher rate of recurrences of the neck nodes is observed if the pre- and posttreatment volumes are larger than the threshold values indicated by the vertical and horizontal lines.

been shown to be a good prognosticator of tumor response which correlated well with local control. We have previously demonstrated the same result in carcinomas of the uterine cervix<sup>7)</sup>. A more simple method to predict prognosis using parameters such as the "area" or "diameter" of the tumor is under investigation.

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