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## Spinal Recurrence From Intracranial Germinoma: Risk Factors and Treatment Outcome for Spinal Recurrence

Kazuhiko Ogawa, M.D.\*, Yoshihiko Yoshii, M.D.†, Naoto Shikama, M.D.‡, Katsumasa Nakamura, M.D.§, Takashi Uno, M.D.¶, Hiroshi Onishi, M.D.¶, Jun Itami, M.D.\*\*, Yoshiyuki Shioyama, M.D.‡, Shiro Iriaha, M.D.\*, Akio Hyodo, M.D.‡, Takafumi Toita, M.D.\*, Yasumasa Kakinohana, Ph.D.\*, Wakana Tamaki, M.D.\*, Hisao Ito, M.D.¶, Sadayuki Murayama, M.D.\*

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### Purpose

To analyze retrospectively the risk factors of spinal recurrence in patients with intracranial germinoma and clinical outcomes of patients who developed spinal recurrence.

### Methods and Materials

Between 1980 and 2007, 165 patients with no evidence of spinal metastases at diagnosis were treated with cranial radiotherapy without spinal irradiation. The median follow-up in all 165 patients was 61.2 months (range, 1.2–260.1 months).

### Results

After the initial treatment, 15 patients (9.1%) developed spinal recurrences. Multivariate analysis revealed that large intracranial disease ( $\geq 4$  cm) and multifocal intracranial disease were independent risk factors for spinal recurrence. Radiation field, total radiation dose, and the use of chemotherapy did not affect the occurrence of spinal recurrences. Of the 15 patients who experienced spinal recurrence, the 3-year actuarial overall survival and disease-free survival (DFS) rates from the beginning of salvage treatments were 65% and 57%, respectively. In the analysis, presence of intracranial recurrence and salvage treatment modality (radiotherapy with chemotherapy vs. radiotherapy alone) had a statistically significant impact on DFS. The 3-year DFS rate in patients with no intracranial recurrence and treated with both spinal radiotherapy and chemotherapy was 100%, whereas only 17% in patients with intracranial recurrence or treated with radiotherapy alone ( $p = 0.001$ ).

### Conclusion

Large intracranial disease and multifocal intracranial disease were risk factors for spinal recurrence in patients with intracranial germinoma with no evidence of spinal metastases at diagnosis. For patients who developed spinal recurrence alone, salvage treatment combined with spinal radiotherapy and chemotherapy was effective in controlling the recurrent disease.

[Germinomas](#), [Spinal recurrence](#), [Radiation](#), [Chemotherapy](#)

\* Department of Radiology, University of the Ryukyus, Okinawa, Japan  
 † Department of Neurosurgery, University of the Ryukyus, Okinawa, Japan  
 ‡ Department of Radiology, Shinshu University, Fukuoka, Japan  
 § Department of Radiology, Kyushu University, Nagano, Japan  
 ¶ Department of Radiology, Chiba University, Chiba, Japan  
 ¶ Department of Radiology, Yamanashi University, Yamanashi, Japan  
 \* Department of Radiology, International Medical Center of Japan, Tokyo, Japan


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 Reprint requests to: Dr. Kazuhiko Ogawa, Department of Radiology, Graduate School of Medical Science, University of the Ryukyus, 207 Uehara, Nishihara-cho, Okinawa, 903-0215, Japan. Tel: (+81) 98-895-3331 (ext. 2401); Fax: (+81) 98-895-1420

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