Secondary gliosarcoma: a review of clinical features and pathological diagnosis.

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Object Although secondary gliosarcoma after treatment of primary glioblastoma multiforme has been described, little is known of these rare tumors. In this article the authors review the literature on secondary gliosarcoma, with attention to clinical course and pathological features. Methods A PubMed search of the key word intracranial "gliosarcoma" with and without "radiation" or "radiotherapy" in humans was performed. The 204 citations yielded were screened for relevancy to gliosarcomas that occur after treatment of previous intracranial neoplasms. Results A search of the literature yielded 24 relevant articles, combined for a total of only 12 cases of secondary gliosarcoma and 12 cases of radiation-induced gliosarcoma. Of the 12 cases of secondary gliosarcoma, all were previously treated with surgery and radiotherapy (mean dose 50.7 Gy), with a mean survival of 13 months since time of gliosarcoma diagnosis (range 6.9-19.4 months). In the cases of radiation-induced gliosarcoma, the mean dose of previous radiotherapy was 51.3 Gy (median 54 Gy, range 24-60 Gy), and the mean survival since gliosarcoma diagnosis was 6.7 months (median 6 months, range 2-10 months). Conclusions Secondary gliosarcoma and radiation-induced gliosarcoma are exceedingly rare. The literature on secondary gliosarcoma illustrates a more favorable survival than for primary gliosarcoma but remains limited regarding clinical and radiographic presentation, response to treatment, and pathogenesis. The results of the present review also support the notion that secondary gliosarcomas and radiation-induced gliosarcomas are distinct entities, with longer survival and shorter latency of gliosarcoma induction seen in the former. Efforts to elucidate the role of radiotherapy in the induction of gliosarcomas may yield new insights into therapeutic risks of cranial radiation and CNS tumor pathogenesis.

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