Case report: Cerebral radiation necrosis in a patient with advanced testicular nonseminomatous germ cell tumor with brain metastases after whole brain radiotherapy

Ian Zing Tan*, Kong Leong Yu, Pei Jye Voon
Radiotherapy, Oncology and Palliative Care Department, Sarawak General Hospital, Malaysia

**Abstract: Background:** Cerebral radiation necrosis (CRN) is a late, irreversible complication of radiation to the brain or its surrounding structures, especially debilitating for patients treated with curative intent. We report a case of advanced testicular nonseminomatous germ cell tumor (NSGCT) who developed CRN after palliative dose of whole brain radiotherapy (WBRT) for multifocal brain metastases. **Case report:** A 24-year-old gentleman presented with progressively painful left testicular mass measuring 5.6 × 8.8 cm. His serum AFP, LDH and b-HCG levels were elevated at 860 ng/mL, 392 U/L and 5490 IU/L, respectively. He underwent a radical left orchidectomy which confirmed a mixed NSGCT with yolk sac (60%), immature teratoma (25%) and embryonal carcinoma (5%) components. Post orchidectomy, his serum AFP and LDH levels dropped but his β-HCG level quadrupled. Staging CT showed advanced disease with bilateral lung and nodal metastases. He developed severe headache with seizures and an urgent CT brain showed multiple hemorrhagic brain metastases. He received WBRT 20 Gy/5 fractions over 1 week, followed by 4 cycles of Bleomycin/Etoposide/Cisplatin (BEP) chemotherapy. Upon treatment completion, he demonstrated good radiological response with normalization of tumor markers. Six months later, he developed bilateral homonymous quadrantanopia with no other neurological symptoms but his tumor markers remained normal. Repeated CT brain showed new bilateral occipital rim enhancing lesions with perilesional edema. MRI showed these lesions had irregular intralesional diffusion, increased diffusivity, and swiss cheese enhancement pattern. On spectroscopy, they demonstrated high lactate, low N-acetylaspartate and low creatine. PET/CT confirmed no FDG-avidity in these lesions and the radiological diagnosis of CRN was established. However, he declined open biopsy for pathological confirmation. Four years later, he remains in remission with stable bilateral homonymous quadrantanopia. **Conclusion:** CRN remains a diagnostic and therapeutic challenge, and advancements these modalities are encouraged to improve long term patient outcomes.

**Keywords:** cerebral radiation necrosis; advanced testicular nonseminomatous germ cell tumor; therapy


*Correspondence to: Ian Zing Tan, Radiotherapy, Oncology and Palliative Care Department, Sarawak General Hospital, Malaysia.