Cerebral abscess complicating Embolization and Gamma Knife Radiosurgery for intracranial ArterioVenous Malformation.

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Introduction

Deep-seated ArterioVenous Malformations (AVM) are dealt with embolisation and subsequent radiosurgery on residual nidus. Complications of surgery in AVM are well known. Complications of endovascular treatment have been less frequently reported.

Material and Methods

This 55-year-old woman was treated by embolisation for a large deep-seated frontotemporal AVM fed by the left pericallosal artery and the M1 segment of the left middle cerebral artery. Endovascular treatment consisted of Microplex coils embolisation (Glubran) during one session on July 2010. A residual nidus was treated with Gamma knife on March 2011. Six months later, the patient deteriorated suddenly. MRI showed strong ring-enhancement surrounding the treated AVM, associated with severe brain oedema. We performed a left-sided decompressive craniectomy because of the sudden onset of coma. Bacteriological sampling during surgery revealed intracerebral Propioni bacterium. The patient received antibiotics for 6 weeks and recovered completely.

Discussion

Despite endovascular treatment seems less invasive than surgery, it can be associated with complications. Meyer reported in 1988 a bacteraemia occurrence rate of 32% after endovascular procedures lasting more than 2 hours. In our patient, causative organism was Propioni bacterium, a skin commensal. In case of associated Radiosurgery, brain abscess must be differentiated from early radionecrosis.

Conclusion

Brain abscess may rarely complicate AVM embolisation. The diagnosis must be evoked in front of neurological impairment with pathological enhancement on imaging following endovascular treatment. Antibiotic prophylaxis must be considered in endovascular procedures to prevent infectious complications.
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The patient was treated with gamma perfexion using standard procedure. Seven isocenters were used to perform a conformation planning. We prescribe a margin dose of 22Gy to the 50%isodose in one session (maximum dose was 44Gy). The duration of irradiation was 35,7 minutes. The residual nidus of AVM was included in the 50% isodose configuration.

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Case Report

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Discussion

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In case of associated radiosurgery, brain abscess must be differentiated from early radionecrosis. Lack of blood supply around inert material after an efficient embolization, endothelial lesions produced by the catheter and by the toxicity of Microplex coils embolisation (Glubran) and radionecrosis related to gamma knife can lead to blood-brain barrier rupture. Bacteraemia and disruption of blood-brain barrier can induce cerebral abscess.

Conclusion

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