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Research Article

Correlative Analysis of Massive Epistaxis and Pseudoaneurysms in Nasopharyngeal Carcinoma after Radiotherapy and a 10-Year Review

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ARTICLE INFO

Article history:

Received: 23 December, 2020

Accepted: 6 February, 2021

Published: 16 February, 2021

Keywords:

Pseudoaneurysm

nasopharyngeal carcinoma

epistaxis

ABSTRACT

Objective: Massive epistaxis after radiotherapy for nasopharyngeal carcinoma (NPC) is a common clinical critical illness, which often leads to death of patients. This article focuses on the relationship between massive epistaxis and pseudoaneurysm after radiotherapy in patients with NPC and discusses clinically relevant treatment strategies.

Methods: A review was performed in 21 patients with massive epistaxis after radiotherapy for NPC from January 2011 to December 2019, and all of the patients were examined by computed tomography angiography (CTA). We also reviewed the English literature over the past 10 years to analyse the characteristics and related causes of pseudoaneurysms in terms of the clinical stage of NPC, course of radiotherapy, and affected artery. An analysis was performed on the methods of endovascular interventional treatment of such pseudoaneurysms.

Results: Among the 21 patients with massive epistaxis after radiotherapy for NPC, 19 (90%) cases had accompanying bone destruction of the skull base; 13 cases (62%) showed tumor recurrence; 15 cases (71%) were in stage III or IV of NPC; 14 cases (67%) had combined pseudoaneurysms, including 9 cases occurring in the internal carotid artery (ICA) and 5 cases occurring in the external carotid artery (ECA). These data were consistent with the results of literature review. On analysis with imaging, we found that such pseudoaneurysms are associated with necrosis and infection of the local bone and soft tissue, and that the petrous part of the ICA was the most common predilection site. We also found that 11 of 14 pseudoaneurysms caused sentinel hemorrhage in the initial phase. In addition to anterior and posterior nasal packing, endovascular interventional therapy was the most important management option. All 14 patients with pseudoaneurysms underwent endovascular interventional therapy, but 1 patient died due to hemorrhagic shock during the procedure. Among the others, 9 patients underwent occlusion of the ICA or ECA with a stainless-steel coil, and rebleeding did not occur again. One patient underwent selected vascular embolization with a covered stent. Direct occlusion of the pseudoaneurysm was performed in 3 patients.

Conclusion: Pseudoaneurysm, which was a serious complication after radiotherapy in patients with NPC, could cause massive epistaxis with high mortality. The formation of a pseudoaneurysm was closely associated with a high carcinoma stage, re-radiotherapy, and local bone destruction and infection. Most cases had sentinel epistaxis, which was considered the bleeding characteristic. The imaging material prompted that pseudoaneurysm had a predisposition to the petrous part of the ICA, while the preferred therapy was endovascular embolization treatment.

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