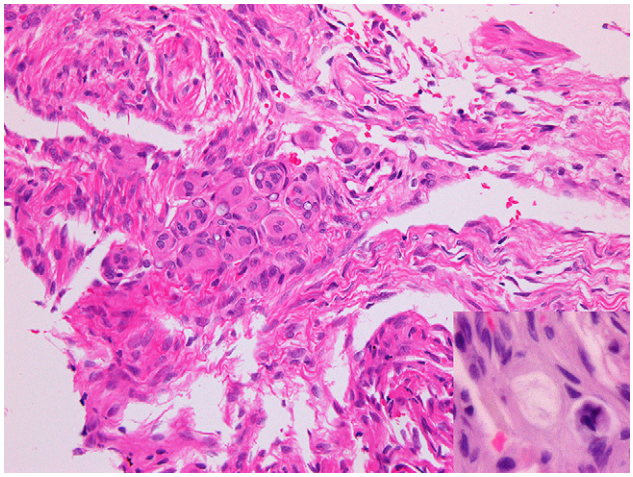

FIGURE 2. Microscopically, the nodule consists of tumor cells demonstrating a mixture of meningotheliomatous and fibrous elements (hematoxylin and eosin stain). A psammoma body is evident (islet).

DISCUSSION

We have successfully followed up the first case of multiple pulmonary meningioma by CT scan for more than 10 years after the first operation. During this period, the possibility of metastasis from an intracranial or intraspinal primary tumor was excluded by imaging modalities including CT scan and MRI. Another lesion developed in the right lung and was histologically confirmed to be meningioma, but increase in size was very slow and the lesion has remained solitary.

Immunohistochemically, the findings supported a meningothelial origin for the lesion, in line with other reports.[1,3] The exact origin of meningiomas in the thorax is still debated, and different theories have been advocated, such as intrathoracic differentiation of meningocytes or arachnoid cells, ectopic proliferation of arachnoid cells, or direct/indirect extension of primary intracranial meningiomas.[1-4] In the present case, the following possibility may explain the synchronous and metachronous multiplicity: multiple pulmonary meningothelium-like nodules grew synchronously and metachronously.[1,5] The tumor usually grows very slowly and patients are often free of symptoms. Even though the majority of cases demonstrate a benign behavior, the treatment usually consists of complete surgical resection. In the present case, although the new lesion demonstrated continued growth on imaging, a benign native lesion was evident on the basis of examination of a percutaneous biopsy specimen. Thus, we concluded that these tumors are amenable to surgical resection, especially in cases that prove to be benign by biopsy or cytologic examination.

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Angiosarcoma in the aortic arch presented as repeat strokes

Yu-Yun Nan, MD,[a] Yuan-Chang Liu, MD,[b] Ming-Shian Lu, MD,[a] Sui Hsueh, MD,[c] Hsien-Kun Chang, MD,[d] and Yao-Kuang Huang, MD,[a,e] Linkou, Chia-Yi, and Taipei, Taiwan

From the Division of Thoracic and Cardiovascular Surgery[a] and the Departments of Medial Image and Intervention,[b] Pathology,[c] and Oncology,[d] Chang Gung Memorial Hospital, and Chang Gung University, College of Medicine, Linkou and Chia-Yi, Taiwan, and the Graduate Institute of Clinical Medicines,[e] College of Medicine, Taipei Medical University, Taipei, Taiwan.

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Address for reprints: Yao-Kuang Huang, MD, Division of Cardiac Surgery, Chang Gung Memorial Hospital, Linkou, and Graduate Institute of Clinical Medicine, College of Medicine, Taipei Medical University, 5, Fu-Shin Rd, Kwei-Shan, Taoyuan, Taiwan 33377 (E-mail: huang137@mac.com).

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A 51-year-old man visited a local medical clinic 4 weeks before admission because of a 6-month history of weight loss and anorexia. His medical history was unremarkable except for a blood pressure discrepancy in both arms on physical examination. Furthermore, a palpable abdominal mass was found and proved later to be a probable malignant adrenal tumor by means of abdominal computed tomographic analysis.

He experienced several episodes of unconsciousness with cyanotic apnea, which required brief resuscitation and mechanical ventilator support. An unusual mass inside the innominate artery was discovered in a brain computed

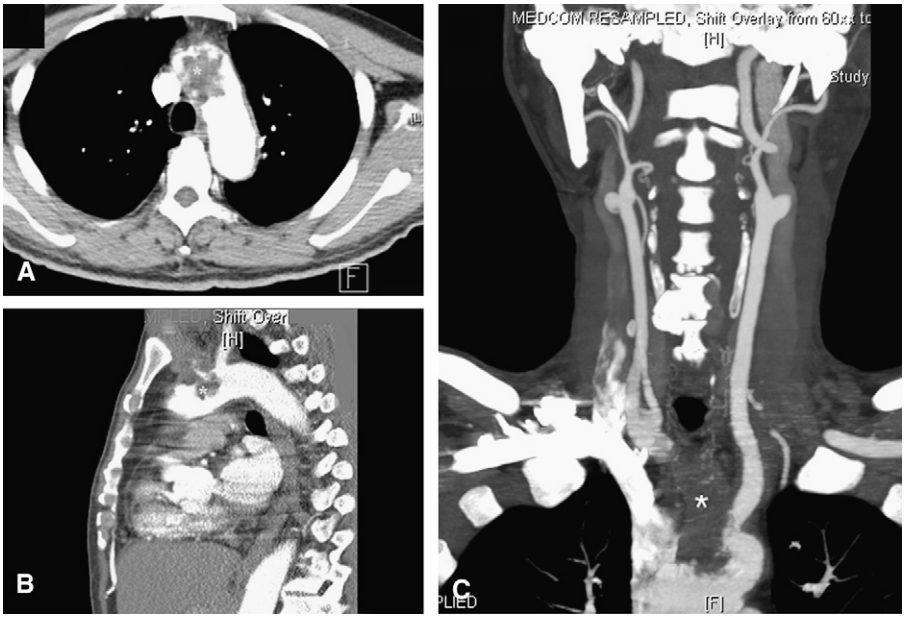

FIGURE 1. Preoperative chest computed tomographic angiogram. A, *Horizontal view*: an unusual mass in the ascending aorta and aortic arch. B, *Sagittal view*: floating, cauliflower-like mass at the orifice of the left common carotid artery. C, *Coronary view*: complete obstruction of the innominate artery and compromise of the left common carotid artery orifice. *Asterisk*, Intra-aortic mass.

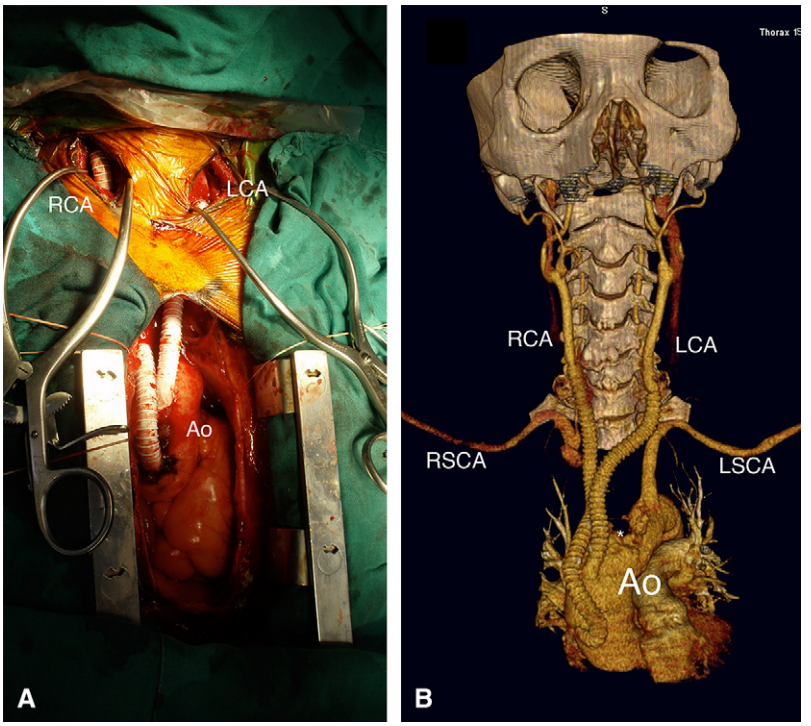

FIGURE 2. A, Intraoperative photos: ascending-aorta–bilateral carotid artery bypass graft. *Ao*, Ascending aorta; *LCA*, left common carotid artery; *RCA*, right common carotid artery. B, Reconstruction of the computed tomogram indicates the arch braches, bypass graft, and intra-aortic lesion. *Ao*, Ascending aorta; *LCA*, left common carotid artery; *LSCA*, left subclavian artery; *RCA*, right common carotid artery; *RSCA*, right subclavian artery. *Asterisk*, Intra-aortic lesion.

tomographic scan to exclude intracranial pathology. The mass had occluded the innominate artery completely with compression of the left carotid artery (Figure 1). Advanced malignant disease was suspected, and palliative surgical bypass was designed to avoid further brain embolic or ischemic events. The ascending aorta was approached through a median sternotomy, and both carotid arteries were explored with oblique incisions along with the sternocleidomastoid muscle. Proximal aortic anastomosis was done after the application of a nontraumatic vascular clamp. Some intra-aortic necrotic tissue was visible after opening the ascending aorta. This was retrieved and sent for further pathologic examination. Bypass with an 8-mm polytetrafluoroethylene graft (Gore-Tex graft, W. L. Gore & Associates, Inc, Newark, Del) from the ascending aorta to both carotid arteries was carried out to rescue brain perfusion (Figure 2). Notably, a distal anastomosis was performed in an end-to-end fashion to reperfuse the brain and to avoid further embolism. The ascending aorta–carotid artery bypass was completed without the aim of cardiopulmonary bypass support. The patient was extubated the day after the operation. The pathologic examination of the intra-aortic mass was largely necrotic tissue and comprised of large epithelioid or histiocytoid cells that were poorly cohesive, exhibiting a high nuclear to cytoplasmic ratio. Nuclei were pleomorphic with macronucleoli and numerous mitotic figures, including abnormal forms. The tumor stained positive for vimentin and revealed abundant microvasculature and stained negative for desmin, neurofilament, and cytokeratin. Tissue from the adrenal mass was proved identical to the pathology of the intra-aortic mass later through a percutaneous echocardiogram-guided biopsy. The final diagnosis was compatible with high-grade angiosarcoma with adrenal and spleen metastasis. Total resection of the intra-aortic mass with aortic arch replacement was not performed because of the incurable nature of the underlying disease. The patient refused further chemotherapy for the high-grade angiosarcoma. He went home at 2 weeks after the operation and died of multiple visceral metastases at the seventh month after discharge. No cerebral infarction or other neurologic events occurred before he died.

DISCUSSION

Primary malignant tumors of the aorta can be divided into intimal angiosarcomas (of endothelial origin), intimal myofibroblastic sarcomas (of mesenchymal origin), and mural sarcomas of the aorta, depending on the immunohistochemical pattern of the tumors.[1] Primary intimal angiosarcoma of the aorta, as in the present case, is extremely rare. The literature contains less than 40 cases of angiosarcomas of the aorta diagnosed on the basis of standard staining procedures and immunohistochemical studies and mostly were confirmed at autopsy.[2-5] Therapeutic management of primary intimal angiosarcoma of the aorta is difficult and challenging. Surgical resection of the tumor-bearing aorta with graft interposition is the preferred therapy, albeit of uncertain benefit to the patient. Chemotherapy and radiotherapy have proved to be futile for survival benefit and mostly are applied only in embolic, metastatic, or nonresectable situations. In the present case palliative bypass surgery was successful in preventing further ischemic–embolic events and to obtain tissue samples for definite diagnosis. Although surgical bypass might not prolong the patient's survival, it could shorten hospital stay and improves quality of life.

In conclusion, this case presents an unusual experience of treating advanced angiosarcoma in the aortic arch with compromised brain perfusion. Palliative bypass from the ascending aorta to both carotid arteries, although less beneficial to survival, is a potential option to improve the patient's quality of life.

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