



Clinical Study

Treatment of fenestrated vertebrobasilar junction-related aneurysms with endovascular techniques

De-Yuan Zhu¹, Yi-Bin Fang¹, Yi-Na Wu, Qiang Li, Guo-Li Duan, Jian-Min Liu^{*}, Yi Xu, Bo Hong, Wen-Yuan Zhao, Qing-Hai Huang^{*}

Department of Neurosurgery, Changhai Hospital, Second Military Medical University, 168 Changhai Road, Shanghai 200433, PR China

ARTICLE INFO

Article history:

Received 2 August 2015

Accepted 19 September 2015

Keywords:

Aneurysm
Endovascular management
Fenestration
Literature review
Stent-assisted coiling
Vertebrobasilar junction

ABSTRACT

Fenestrated vertebrobasilar junction-related aneurysms (fvBJ-AN) are uncommon and endovascular management strategies have become the first options for the treatment of these lesions. This clinical study aimed to report our experience in the endovascular management of these lesions and to review the literature. We retrospectively reviewed 10 consecutive patients harboring 12 fvBJ-AN between January 2007 and December 2014. The demographic, angiographic and clinical data were reviewed. Additionally, a literature review was performed. Endovascular management strategies were successfully applied in all 10 patients. Post-procedural angiograms indicated total occlusion in eight (66.7%) aneurysms, a residual neck in one (8.3%) aneurysm, and three residual aneurysms (25%). No procedure-related complications were observed. Follow-up angiograms were obtained in eight patients and revealed nine occluded aneurysms and one improved aneurysm; two patients were lost to angiographic follow-up. Clinical follow-ups were obtained in all patients (until July 2015), and the modified Rankin Scale scores at 69.5 months (range 17–101 months) of follow-up were 0 in eight patients and 1 in two patients. Endovascular management strategies provided a high occlusion rate and an acceptable complication rate and are thus efficacious in the treatment of fvBJ-AN. Further studies are necessary to validate the utility of these treatments due to the low incidence of fvBJ-AN.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Fenestration of the vertebrobasilar junction is a rare congenital vascular variation with an incidence of 0.18% [1]. However, concurrent aneurysms related to fenestrations at this position are not uncommon. Surgical treatment of fenestrated vertebrobasilar junction-related aneurysm (fvBJ-AN) is fraught with high rates of morbidity and mortality due to the complex geometry of the fenestration and the surrounding anatomy [2]. Endovascular management has emerged as the first-line therapy for the treatment of this subset of aneurysms.

We retrospectively reviewed 10 consecutive patients harboring 12 fvBJ-AN who underwent endovascular management in our center. Additionally, based on our findings and a literature review, we provide a report that includes the greatest number of cases currently available and discuss the progress in treatment of fvBJ-AN with endovascular techniques.

2. Methods

2.1. Patient population

Between January 2007 and December 2014, 10 patients harboring 12 fvBJ-AN underwent endovascular treatment in our center. The data from the 10 patients are summarized in Table 1. Among these 10 patients, the male-female ratio was 4:6. The mean age was 55.9 ± 13.9 years (range 33–76 years). Five patients were admitted for subarachnoid hemorrhage; among these patients, the Hunt–Hess grades were I in two patients, II in two patients, and III in one patient. The other five patients were admitted for headaches in two patients, dizziness in two patients, and the fvBJ-AN was found incidentally in one patient. Two patients had two fvBJ-AN.

2.2. fvBJ-AN classification

According to the classification of Trivelato et al. [3], the following two parameters were considered essential for determining the type of fvBJ-AN. (1) The width of the neck: narrow necks were given a

^{*} Corresponding authors. Tel.: +86 21 3116 1800; fax: +86 21 3116 1800.

E-mail addresses: chstroke@163.com (J.-M. Liu), ocinhqh@163.com (Q.-H. Huang).

¹ De-Yuan Zhu and Yi-Bin Fang contributed equally to this work.

score of 1, and wide necks were given a score of 2 (a wide neck was defined as a neck size ≥ 4 mm or a dome-to-neck ratio of <2). (2) The location of the aneurysm: aneurysms at the bifurcation of the fenestration were classified as A, and aneurysms located asymmetrically in one limb of the fenestration were classified as B. Our 12 fVBJ-AN were allocated into three types, being 1A, 2A and 2B (Table 1).

tration were classified as A, and aneurysms located asymmetrically in one limb of the fenestration were classified as B. Our 12 fVBJ-AN were allocated into three types, being 1A, 2A and 2B (Table 1).

Table 1

Summary of patients harboring fenestrated vertebrabasiar junction-related aneurysms who underwent endovascular treatment

Patient	Age, years/ Sex	Presentation	Combined diseases	HH grade	Position	Dome/Neck (mm)	Type	EVT	Immediate result ^a	Peri-operative complications	Follow-up		
											Time (months)	mRS AD	Angiography (months)
1	60/F	Incidental	None	0	Ventral	5.5/2.1	1A	CE	1	None	101	0	Lost to follow-up
2	66/F	Dizziness	None	1	Dorsal	7.3/7.2	2A	SAC	2	None	96	1	Lost to follow-up
3	76/F	Dizziness	None	0	Dorsal	2.3/2.0	2A	OS	3	None	88	0	Improved (CTA) (13)
					Ventral	4.0/3.1	2A	OS	3				Occluded (CTA) (13)
4	47/M	Headache	None	0	Dorsal	4.5/3.1	2A	SAC	3	None	84	0	Occluded (22)
5	54/M	SAH	None	2	Ventral	3.5/3.2	2A	SAC	1	None	82	0	Occluded (16)
6	70/F	SAH	PcomA aneurysm ^b	3	Lateral	2.7/1.9	2B	CE	1	None	76	1	Occluded (18)
7	53/F	SAH	None	1	Ventral	2.9/2.1	2B	CE	1	None	73	0	Occluded (15)
8	37/F	SAH	L-ICA aneurysm ^c	1	Ventral	6.2/2.4	1A	CE	1	None	54	0	Occluded (20)
9	63/M	SAH	L-ICA aneurysm ^d	2	Dorsal	2.0/2.2	2B	CE	1	None	24	0	Occluded (11)
					Ventral	1.5/2.9	2A	SAC	1				Occluded (11)
10	33/M	Headache	None	0	Dorsal	2.9/1.9	2A	CE	1	None	17	0	Occluded (7)

BBA = blood blister-like Aneurysm, CE = conventional coiling, CTA = CT angiography, EVT = endovascular treatment, F = female, HH = Hunt-Hess, L-ICA = left-internal carotid artery, M = male, mRS AD = modified Rankin Scale at discharge, OS = overlapping stenting, PcomA = posterior communicating artery, SAC = stent-assisted coiling.

^a Raymond scale: 1 = total occlusion, 2 = residual neck, 3 = residual aneurysm.

^b A tiny unruptured left posterior communicating artery aneurysm was detected and left untreated.

^c A tiny unruptured anterior communicating artery aneurysm was detected and left untreated.

^d A left parclinoid aneurysm and two vertebrabasiar junction-related aneurysms were detected, and were treated at the same session because it was difficult to tell which was the relevant lesion.

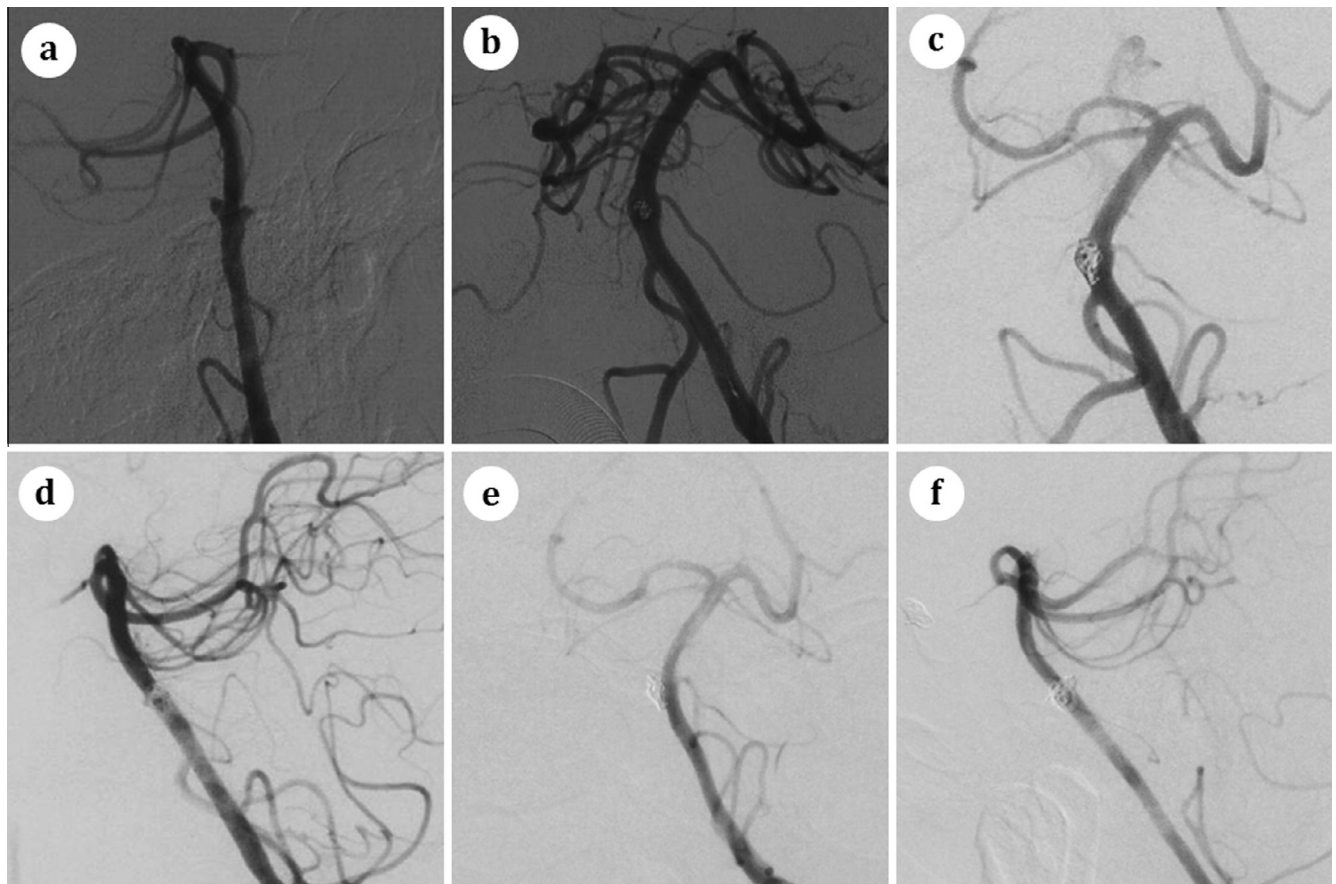


Fig. 1. Embolization of two fenestrated vertebrabasiar junction-related aneurysms (fVBJ-AN) in Patient 9, a 63-year-old man who presented with a subarachnoid hemorrhage. (a) Angiogram of the left vertebral artery (VA) confirmed the diagnosis of two fVBJ-AN. (b) Anterior-posterior view of the left VA angiogram after conventional coiling of the dorsal aneurysm. Anterior-posterior view (c) and lateral view (d) of left VA angiogram after the stent-assisted coiling of the ventral aneurysm. The stent was deployed in the left limb of the fenestration, and the right limb was partially coiled. (e, f) Anterior-posterior (e) and lateral (f) angiographic follow-up at 9 months revealed total occlusion of the aneurysms and the right limb of the fenestration.

Download English Version:

<https://daneshyari.com/en/article/3058358>

Download Persian Version:

<https://daneshyari.com/article/3058358>

[Daneshyari.com](https://daneshyari.com)