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## Vascular Malformations of the Central Nervous System: Case Studies

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## Table of Contents

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Introduction .....	2
Arteriovenous Malformations .....	2
Cavernous Angiomas .....	8
Capillary Telangiectasias .....	11
Venous Angiomas .....	11
Summary Points .....	13
References .....	13

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# Vascular Malformations of the Central Nervous System: Case Studies

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## I. INTRODUCTION

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Vascular malformations of the central nervous system (CNS) represent a heterogeneous group of lesions with various natural histories and treatments. CNS vascular malformations (**Table 1**) are commonly classified as belonging to 1 of 4 categories: (1) **arteriovenous malformations** (AVMs), (2) **cavernous angiomas** (ie, cavernomas, cavernous malformations), (3) **capillary telangiectasias**, and (4) **venous angiomas** (ie, developmental venous anomalies).<sup>1</sup> Based on autopsy series, the incidence of venous angiomas is approximately 2%, AVMs are 1%, capillary telangiectasias are 0.7%, and cavernous angiomas are 0.4%.<sup>2</sup> AVMs and cavernous angiomas commonly present with hemorrhage, seizures, or progressive neurologic deficit; treatment is often required. In contrast, capillary telangiectasias and venous angiomas are almost always incidental and/or asymptomatic and thus rarely require treatment. This manual describes the presentation, diagnosis, and treatment of all 4 CNS vascular malformations. Two case patients are presented to highlight specific features of the management of patients with AVMs or cavernous angiomas.

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## II. ARTERIOVENOUS MALFORMATIONS

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### CASE PATIENT I PRESENTATION

Patient 1 is a 40-year-old woman with a several-year history of headaches, initially believed to be menstrual migraines. Soon after her fortieth birthday, she experienced an increase in the severity and frequency of her headaches. Later, she noticed episodes in which her vision on the left became “cloudy” and she saw “spots.” On examination, a partial left visual field defect is noted. A computed tomography (CT) scan reveals a mass in the right occipital lobe, which enhances after contrast administration (**Figures 1A** and **1B**). A subsequent magnetic resonance image (MRI) reveals a lesion comprised of multiple flow-voids (**Figure 1C**). Patient 1 is referred for an arteriogram, which demonstrates a 3- to 4-cm high-flow AVM in the right parieto-occipital region (**Figure 2A**).

### GENERAL PRINCIPLES

#### Presentation

- AVMs commonly present with which of the following signs or symptoms?