



The risk of symptomatic hemorrhage during pregnancy in cerebral cavernous malformations

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Introduction

The risk of a symptomatic hemorrhage from a cerebral cavernous malformation(CCM) during pregnancy remains poorly defined. We undertook this study to better define the risk of pregnancy in this population.

Methods

We examined the records of female patients with both sporadic and familial forms of CCM collected as a part of the Barrow CCM outcomes study. Clinical data related to pregnancy, including type of delivery and any change in neurological status, was collected from chart review and patient interviews.

Table 1

Variable	Sporadic CCM	Familial CCM
Patients (n=64)	28	36
Pregnancies (n=168)	56	112
CCM [†] lesions (n=201**)	28	173
Average number of lesions	1	4.8
Pregnancies with symptomatic hemorrhage [†] (n=5)	1	4
Symptoms of hemorrhage: seizure	0	4
Symptoms of hemorrhage: sensory	1	0
Risk of hemorrhage per pregnancy [†] (mean 3%)	1.8%	3.6%
Years of pregnancy [†] follow-up (n=148.6)	49.5	99.1
Risk of hemorrhage/patient-year of pregnancy (mean 3.4%)	2%	4%
Vaginal deliveries (n=149)	47	102
Cesarean section deliveries (n=19)	9	10

Summary of Patient Data

Table 2

Patient	Type*	Age Symptom Onset (yrs)	Pregnancies Age (yrs)	Symptomatic Pregnancy (Y/N)	Type of Symptoms	CavMal Surgery (Y/N) / Age (yrs)
1	S	25	27	Yes	Motor	Yes/40
			30	No		
2	F	9	19	Yes	Seizures	No
			24	No		
			29	No		
3	F	8	16	No		Yes/8
			19	Yes	Seizures	Yes/19
			23	Yes	Seizures	
			32	No		
4	F	12	28	Yes	Seizures	No
			32	No		

Summary of Symptomatic Hemorrhage Cases

Results

We identified 168 pregnancies in 64 female CCM patients (28 sporadic and 36 familial). Assuming an average of 46 weeks per pregnancy (40 weeks gestation and 6 weeks puerperium), patients were at risk for a total of 148.6 years. Symptomatic hemorrhage (defined as new onset/exacerbation seizure activity, or any change in neurologic status) occurred during 5 pregnancies, with the most common symptom being seizures (n=4). The overall risk for symptomatic hemorrhage was 3% per pregnancy: 1.8% per pregnancy in the sporadic group, and 3.6% per pregnancy in the familial patients. There were 19 deliveries by cesarean section: 5 for obstetrical reasons, 8 for fear of possible hemorrhage, and 6 for unknown reasons. Vaginal delivery was performed without complications for the remaining 149 pregnancies.

Conclusions

The risk of a symptomatic hemorrhage from a CCM during pregnancy is not increased. History of CCM is not a contraindication to pregnancy or vaginal delivery.

Learning Objectives

To understand the risk of hemorrhage from cavernous malformations during pregnancy.