Cerebral venous thrombosis associated with oligodendroglioma and pregnancy

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ABSTRACT

حتى الآن، كان تخثر الجيب الوعائي الدماغي (CVST) الصفة التشريحية التشخيصية الاولية. ولكن، مع تدخل التصوير بالرنين المغناطيسي وتخطيط الأوعية الدموية وكذلك الاهتمام السريري المعزز. فقد تم التشخيص حالياً وبشكل معتمد عن طريق الحياة. نصف هنا حالة مصابة بتخثر الجيب الوعائي الدماغي (CVST) المصاحب لورم الخلية الدبقية القليلة والحمل. في هذه المريضة، قد ساعدت العوامل التالية في تكون تخثر الجيب الوعائي الدماغي (CVST): اولاً، حالة الحمل لدى المريضة والتي تعتبر عامل خطر معروف للإصابة بتخثر الأوعية، ثانياً قد يكون ورم الخلية الدبقية القليلة قد غير من تركيبة الجيب المجاور (الجيب الجانبي الأيمن) وقام بتحريض إصابة الخثرة في الجيب.

Until now, cerebral venous sinus thrombosis (CVST) was principally an autopsy diagnosis; however, with the introduction of MRI and angiography, as well as enhanced clinical attentiveness, it is now reliably diagnosed during life. Herein, we describe a case of CVST accompanied by oligodendroglioma and pregnancy. In our patient, the following factors contributed to the formation of CVST: First, the pregnancy state, which is a known risk factor for developing venous thrombosis; and secondly, the oligodendroglioma could have changed the architecture of adjacent sinus (right lateral sinus) and provocation of the development of clot in the sinus.

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In 1825, Ribes,[1] a French physician, described the foremost detailed explanation of cerebral venous sinus thrombosis (CVST). He described a middle-aged man with a systemic malignancy; the patient died after a 6-month history of intractable headache, epilepsy, and confusional state. Postmortem autopsy disclosed CVST. Until now, CVST was mainly an autopsy diagnosis; however, with the introduction of MRI and angiography, as well as enhanced clinical attentiveness, it is now reliably diagnosed during life.[2,3] Herein, we describe a pregnant patient suffering from CVST who had a previous oligodendroglioma. We present this case to highlight the concurrent occurrence of CVST and oligodendroglioma in a pregnant woman.

Case Report. A 28-year-old pregnant woman was admitted to the emergency room because of loss of consciousness after an episode of generalized tonic clonic seizure and confusional state that had started approximately 3 days earlier. She was gravid 1, and in the second month of pregnancy. Before the confusion, she had reported generalized pressure like headache and nausea. On initial examination, she was lethargic and confused; she opened her eyes to voices, but did not communicate properly. It is significant that she had history of epilepsy, which had started 10 years before, following an episode of head trauma. At that time, on imaging, an incidental mass had been discovered in the right frontal lobe; on the biopsy sheet, oligodendroglioma had been reported. For the epilepsy, she took carbamazepine, 200 mg bid regularly. Prior to this event, the latest episode of seizure had occurred 2 years ago. On neurological examination, she was drowsy, cranial nerves were intact, and funduscopy was unrevealing. On motor examination, after painful stimulation, she localized to the pain more slowly on the left side in comparison with the right. On general examination, there was no significant abnormality. Emergent brain MRI and MRV were performed. On T1/brain MRI, a heterogeneous mottled mass was detected in the right frontal lobe denoting oligodendroglioma (**Figure 1**). Moreover, hyperintensity was found in the superior sagittal sinus

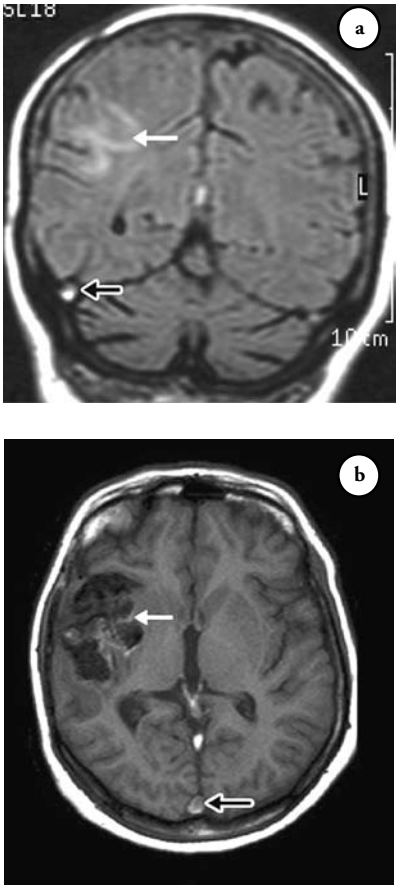

Figure 1 - A T1/W brain MRI demonstrating clots as well as tumor: **a**) a heterogeneous mass in the right frontal lobe (white arrow), denoting oligodendroglioma and **b**) venous thrombosis in the right lateral sinus in coronal section and superior sagittal sinus in axial section (black arrow).

Figure 2 - Brain MRV indicating the disappearance of superior sagittal sinus, straight sinus, inferior sagittal sinus, and Galen vein (arrows).

and right transverse sinus, suggesting superior sagittal and right transverse sinus thrombosis. On brain MRV, superior sagittal sinus, straight sinus, inferior sagittal sinus, and Galen vein were not apparent (**Figure 2**). She was admitted to the intensive care unit, and heparin was started with the diagnosis of CVST. Two days later, mild papilledema appeared in both eyes and her confusion increased, however, on day 4 her general condition slightly improved. She was discharged on day 7; at discharge, she was alert, and oriented without neurological deficit. The workup for secondary causes of hyper coagulable state performed including antinuclear antibodies, ANCA, antiphospholipid antibody, anticardiolipin antibody, and lupus anticoagulant antibody, as well as protein C, S, and Factor V Leiden, which were negative. Her homocysteine level was within normal limits.

Discussion. Systemic thrombosis is well recognized in cancer patients, although CVSTs are uncommon in cancer. Cerebrovascular lesions are seen in just under one fifth of patients with cancer, resulting from 4 kinds of disorders sometimes intermingled in highly developed disseminated cancer: direct effects of the tumor, coagulopathies, infections, and therapeutic side effects;[4-7] the latter 2, more than ever are seen in hematological malignancies.[5] Furthermore, CVST accompanied by squamous cell metastatic cervical mass,[8] non-Hodgkin's lymphoma,[9] and cerebral metastases of a colorectal cancer[10] have been described. The CVST infrequently presents as a paraneoplastic syndrome.[6] The CVST may accompany brain tumors such as brain glioma,[11] and meningioma; it is noticeable that in brain tumors, the direct invasion of sinuses by tumors (especially in meningioma) provokes the development of CVST. In our case, the following factors might have contributed to the formation of CVST: First of all, the pregnancy state of the patient is a known risk factor for developing venous thrombosis; and secondly, the oligodendroglioma itself could have changed the architecture of the adjacent sinus (right lateral sinus), provoking the advent of clot in the sinus.

In conclusion, in any patient with history of brain tumor and new neurological deficit, especially associated with other risk factors such as pregnancy, other causative factors like CVST besides the tumor recurrence itself, should be kept in mind.

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