Postpartum postural headache due to superior sagittal sinus thrombosis mistaken for spontaneous intracranial hypotension

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Purpose: To describe a case of superior sagittal sinus thrombosis in the puerperal period and the difficulties encountered in the diagnosis and management.

Clinical features: A 29-yr-old multiparous woman presented with a postural headache four weeks after a normal pregnancy and vigorous delivery. Initial presentation suggested spontaneous intracranial hypotension (SIH) since there was no history of epidural or spinal anesthesia, or trauma or surgery to her back or neck. Conservative therapy was initially offered and then a lumbar epidural blood patch (LEBP) was performed, although it failed to relieve the postural headache. A dural leak could not be demonstrated but an MRV (magnetic resonance venography) revealed a superior sagittal sinus thrombosis (SSST). Although anticoagulant therapy was immediately initiated, the neurologist remained convinced that the postural headache was secondary to SIH, and, consequently, a second epidural blood patch was requested. Anesthesia was reluctant to perform an LEBP at this point and suggested continuing anticoagulation until a subsequent MRV demonstrated recanalization of the SSST. This advice was followed and the postural headache resolved spontaneously with intravenous anticoagulation.

Conclusion: The present case illustrates the importance of a multidisciplinary approach to the management of this rare complication of pregnancy. This case also highlights the importance of reviewing the differential diagnosis when considering treatment of a postural headache in the puerperium.

Objectif : Décrire un cas de thrombose du sinus sagittal supérieur, survenue après l'accouchement, et les difficultés de diagnostic et de traitement.

Éléments cliniques : Une femme de 29 ans, multipare, présentait des céphalées posturales quatre semaines après une grossesse normale et un accouchement sans incident. Le premier examen a laissé croire à une hypotension intracrânienne spontanée (HIS), puisque il n'y avait pas d'antécédents liés à une anesthésie épidurale ou rachidienne, ni de traumatisme ou d'opération au dos ou au cou. Une thérapie traditionnelle a été d'abord offerte et un patch sanguin épidural réalisé, ce qui n'a pas éliminé les céphalées. Une fuite durale n'a pu être mise en évidence, mais un examen VRM (véonographie par résonance magnétique) a révélé une thrombose du sinus sagittal supérieur (TSSS). Même si une anticoagulothérapie a été amorcée immédiatement, le neurologue croyait toujours que les céphalées posturales étaient secondaires à une HIS et, par conséquent, un second patch a été demandé. Par ailleurs, l'anesthésiologiste hésitait à injecter du sang à ce moment et suggérait plutôt de poursuivre l'anticoagulation jusqu'à ce qu'un nouvel VRM démontre la recanalisation de la TSSS. On a suivi cette recommandation et les céphalées se sont résorbées spontanément avec l'anticoagulation intraveineuse.

Conclusion : Le cas présent illustre l'importance d'une démarche multidisciplinaire pour traiter une complication rare de la grossesse. Il souligne également l'intérêt de revoir le diagnostic différentiel au moment de traiter des céphalées posturales puerpérales.

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As many as 39% of women reportedly develop a headache in the postpartum period.¹ The differential diagnosis of postpartum headache is extensive and the cause of most cases can usually be diagnosed on the basis of the history and physical examination. However, many of the rare etiologies, including cerebral venous thrombosis, may be difficult to diagnose and may delay the institution of the appropriate treatment with potentially catastrophic consequences.

Case history

Three weeks postpartum, a 29-yr-old woman was seen in our hospital with the chief complaint of a postural headache. The headache, which occurred in the upright position and was relieved by assuming the recumbent position, was so severe that she remained in bed unable to care for her newborn baby.

The medical history of this previously healthy woman included three uneventful pregnancies culminating in uncomplicated vaginal deliveries. During her most recent delivery, three weeks before the development of the headache, her labour was quite intense with an extremely vigorous second stage, resulting in facial petechiae and swelling, as well as a subconjunctival hemorrhage. Neither epidural nor spinal labour analgesia were attempted and she denied undergoing lumbar puncture, trauma or surgery to her back, neck or head before transfer to our hospital.

After having had the headache for one week she was initially assessed in her local hospital and then transferred to our tertiary care facility. Assessment in our Emergency Department revealed concurrent complaints of nasal stuffiness, nausea, and nuchal rigidity to horizontal and ventral movements when upright. She denied having fever, nasal discharge, vomiting, dizziness, or any other neurological findings.

Physical examination revealed an obese (95 kg) woman who was afebrile with no focal neurological deficits. Fundoscopic examination was normal. Following this assessment, the etiology of the postural headache was presumed to be sinusitis and she was discharged home on oral antibiotics.

Unfortunately, the patient returned to her local hospital several times with the unrelenting symptoms. Two and a half weeks following initial admission she was again assessed in the Emergency Department of our hospital. The following investigations were reported within normal limits: CBC, electrolytes, ALP, GGT, INR, APTT, ARVVT, activated protein C, protein S and free protein S, antithrombin III, factor V Leiden, prothrombin 20210A, anticardiolipin G and M, and homocysteine.

A diagnostic lumbar puncture, which was reportedly difficult, was performed in our Emergency Department by the neurology housestaff. The CSF evaluation was consistent with a traumatic lumbar puncture, revealing an elevated white blood cell count, red blood cell count, and protein, with normal glucose, and a negative bacterial culture. Computer tomography and MRI scans were both reported as normal aside from evidence of venous congestion. At that time, the neurology consultant entertained the diagnosis of spontaneous intracranial hypotension (SIH), or "low" pressure CSF headache, due to the postural nature of the headache.

Conservative treatment was instituted with oral and *iv* caffeine and then theophylline. Four weeks had elapsed since the onset of the headache and when these treatments failed to resolve the headache, anesthesia was consulted to perform a lumbar epidural blood patch (LEBP).

The LEBP was performed with 27 ml of autologous blood injected incrementally through a 17 gauge epidural needle at the L₃₋₄ interspace. The patient experienced almost instantaneous relief but the headache recurred within four to five hours.

The neurologist, in an attempt to further treat the suspected SIH, then instituted a trial of intravenous methylprednisolone which resolved most of the symptoms. Consequently, the patient was discharged home. The headache returned after three days and she was readmitted to our hospital.

As the headache was presumed to be due to SIH from a spontaneous dural tear with subsequent CSF leak, a neurosurgeon was asked to perform a radionuclide cisternography in an attempt to localize the leak. This investigation did not reveal any evidence of a CSF leak. Three days later, a magnetic resonance venography (MRV) was performed and revealed a superior sagittal sinus thrombosis (SSST). The neurologist immediately initiated full anticoagulation with intravenous heparin.

At this point the neurologist considered the MRV evidence of SSST interesting but remained convinced that the etiology of the headache was SIH, not SSST. Consequently, anesthesiology was asked review the patient and to either repeat the LEBP or institute a lumbar epidural saline infusion. In fact, to facilitate the safe placement of an epidural needle, the neurologist offered to discontinue the intravenous heparin and reverse anticoagulation with protamine.

Following review of the case, anesthesiology still believed that the headache was most likely due to the SSST and suggested that the intravenous heparin should neither be discontinued nor reversed. They

further advised that neither an LEBP nor a lumbar epidural saline infusion should be performed in a patient with a documented SSST. However, if resolution of the headache did not coincide with MRV evidence of SSST resolution, then the LEBP or epidural saline infusion would be reconsidered.

Following approximately 20 days of full anticoagulation the patient's headache spontaneously resolved. The repeat MRV revealed that the SSST had recanalized. The patient was subsequently discharged home almost eight weeks following onset on oral warfarin with no neurologic sequelae and complete resolution of the postural headache.

Discussion

Cerebral venous thrombosis (CVT), such as SSST, is a rare entity that presents as a postural headache resulting from thrombosis of the cerebral veins and/or venous sinuses.² This case report highlights the importance of reviewing the differential diagnosis for a postural headache in the puerperium both prior to the institution of conventional therapy and following the failure of said treatment.

The present case report demonstrates the importance of communication amongst members of our Department of Anesthesiology in identifying the lack of appropriateness of a technical procedure requested by another consultant service. Finally, this case illustrates the importance of the multidisciplinary approach to the management of a rare, but treatable, complication of pregnancy.

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References

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