

Images in Clinical Medicine

Cerebral Abscess – Sequel of Septic Embolization from Thrombophlebitis at Venous Catheter Insertion Site

Received: July 31, 2018 Accepted: August 14, 2018
doi: <http://dx.doi.org/10.3329/jemc.v8i3.38371>

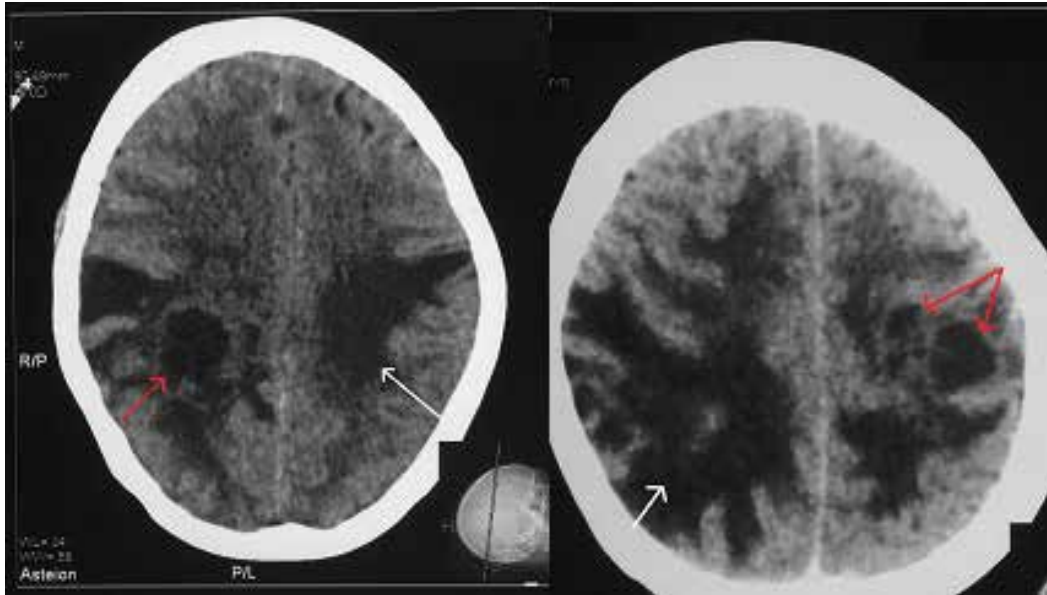


Fig 1. Plain CT scan of brain showing multiple abscesses (red arrows) with marked disproportionate periaabscess edema (white arrows) in bilateral parietal lobes

A 26-year-old female patient was referred to the Department of Radiology & Imaging for a CT scan. Plain and post-contrast images were obtained in axial, coronal and sagittal planes by SIEMENS SOMATOM 328 slice CT scanner. There were multiple rim enhancing irregular outlined round cavities (average + 27 HU) with marked disproportionate perilesional edema in bilateral parietal lobes, largest one measuring about $2.5 \times 2.5 \times 2$ cm, located in right parietal lobe. Mass effect was present, evidenced by 4.5 mm midline shift to left and compression over right lateral ventricle. Since disproportionate perilesional edema is a very much characteristic finding of metastasis, we included cerebral metastases in our differential diagnoses. Due to the fact that metastasis is very much unlikely at this young age unless there is a known primary malignant neoplasm, we considered cerebral abscesses as a potential imaging diagnosis as well. Besides, tuberculomas were also kept in mind since this region is endemic for tuberculosis. As we were checking her

previous health records, we discovered that she was a healthy primi with twin pregnancy and uneventful antenatal period. Two months prior to the CT scan, she underwent cesarean delivery, after which whole blood transfusion was advised. As soon as the blood transfusion was started, patient developed anaphylactic reaction, with sudden extensive maculo-papular rashes throughout the body as well as anuria. She eventually developed acute kidney injury, with serum creatinine 10.68 mg/dL (normal range 0.6–1.2 mg/dL). There was exfoliative dermatitis, involving almost entire body region. Infusions and IV medications were administered through CV line. Arteriovenous fistula was done and it is after 19 dialysis sessions for long two months period, serum creatinine level decreased to 1.63 mg/dL. Meanwhile, she developed episodes of headache, high fever and seizure, which led the patient to undergo this CT scan. Based on these health records, we finally concluded with the diagnosis of a case of cerebral abscesses which might be a sequel of septic

embolization from thrombophlebitis at venous catheter insertion site. The extensive exfoliative dermatitis as well as steroid-induced immunosuppression made the patient prone to develop septic thrombophlebitis at venous accesses, which eventually seeded in brain through septic embolization.

Severe allergic transfusion reactions, i.e., anaphylaxis is rare, in comparison to common transient allergic transfusion reactions. In a study of a large series of transfusion reactions, anaphylaxis occurs in approximately 1 in 30,281 transfusions, which is 1.3% of all transfusion reactions.¹ Since this patient developed acute kidney injury, which required frequent dialysis and IV steroids, CV line and AV fistula were kept for a considerable long duration. Due to the IV steroids, her immunity was suppressed despite concomitant anti-bacterial prophylaxis. Moreover, the exfoliative dermatitis resulting from the anaphylactic transfusion reaction made her prone to develop thrombo-phlebitis at the venous accesses.

Septic thrombo-phlebitis at venous access sites is a potential source of septic embolism to brain, along with other risk factors which include immunosuppression, drug abuse, infective endocarditis and prosthetic mitral valve.² Cerebral abscess from any such potential source typically shows rim enhancing hypodense lesions in CT images.³ Mild to moderate vasogenic edema is usually present surrounding the abscess whereas disproportionate vasogenic edema is a characteristic finding of metastasis.³ Although characteristic, such disproportionate edema is not pathognomonic in case of brain metastasis.^{4,5} MRI can be further helpful in solving the dilemma of abscess or metastasis. Abscesses show high signal in diffusion weighted imaging (DWI) whereas neoplasms typically show low signal in DWI.⁶ In abscess, dual rim sign on susceptibility weighted imaging (SWI), i.e., hypointense outside and hyperintense inside, can be helpful in differentiating from other ring-enhancing lesions.⁷ Lactate peak is found within abscess cavities on magnetic resonance spectroscopy (MRS), whereas high choline-creatinine ratio is seen in metastases.⁸ We present our case with a view to bearing an insight regarding detailed analysis of a patient's health records which help in reaching precise diagnosis both clinically and radiologically as well. Besides the risk of anaphylactic reaction following blood transfusion

as well as subsequent septic thromboembolism are to be considered carefully while justifying the indication and rationale of transfusing blood.

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