

Utility of Diagnostic Cerebral Angiography in the Management of Suspected Primary Central Nervous System Vasculitis.

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INTRODUCTION

Central nervous system (CNS) vasculitis is a rare and poorly understood disease of the brain and spinal cord. Cerebral angiography is the radiological gold standard for diagnosis of CNS vasculitis in patients with compatible clinical findings. However, advances in the quality of noninvasive neuroimaging techniques of cerebral and spinal vasculature such as magnetic resonance angiography (MRA) and computed tomography angiography (CTA) may obviate the need for invasive catheter angiography. Reviewing our recent institutional experience, we assess the utility of performing a digital subtraction angiogram (DSA) in the management of suspected CNS vasculitis.

METHODS

Data from 33 consecutive patients who underwent DSA in addition to either MRA or CTA for suspected CNS vasculitis at Jackson Memorial Hospital, Miami FL between 2011 and 2016 were retrospectively collected. Patient demographics, presenting symptoms, and noninvasive imaging results were recorded. Diagnosis and medical management prior and subsequent to DSA were compared.

RESULTS



Figure 1. Patients with suspected vasculitis classified based on CTA/MRA and subsequent DSA findings. Patients were further grouped based on receipt of immunosuppressive therapy.



Figure 2. 50-year-old, HIV positive man with "beading" diffusely on MRA and confirmed on DSA. A) Magnetic Resonance Angiography images show diffuse medium and small vessel changes consistent with vasculitis or arteritis (blue arrows). B) Posterior circulation digital subtraction angiography subsequently confirmed presence of classic "beading" appearance of large, medium, and small vessels (blue arrows). C) Lateral projection, anterior circulation digital subtraction angiogram images demonstrate medium and small vessel segmental stenosis (blue arrows).

DISCUSSION

Vasculitis of the central nervous system is rare and diagnostically challenging. Brain biopsy remains the gold standard for diagnosis. However there are several disadvantages including high rates of false positives, invasiveness of the procedure, and delay of diagnosis. Diagnosis is often made with laboratory studies, clinical evaluation and imaging modalities.

DSA is the radiological gold standard for diagnosis of CNS vasculitis. However, sensitivity has been reported to range from 40 to 90%, with a specificity of only 30%. In this retrospective review of 33 patients with suspected CNS vasculitis, the management of one patient was altered by results of the DSA (treatment stopped after DSA showed no vasculitic changes). In all cases where MRA and CTA are negative for neurovascular abnormalities suggestive of vasculitis, DSA wa also negative and treatment was unaffected. In one case where MRA/CTA suggested vasculitic changes and DSA was not conclusive of any pathology, the patient was treated regardless due to a high clinical suspicion. This suggests that in many cases, especially when CTA/MRA are negative, the risks of DSA may outweigh the benefits. However, treatment with prolonged immunosuppressive drugs are also associated with significant morbidity. Thus, we recommend a individualized approach where the clinician should employ DSA only when clinical suspicion remains moderate, and DSA may alter medical management.

CONCLUSIONS

Invasive catheter-based angiography may be of limited benefit in the diagnosis and management of PCNSV when considered in the context of clinical and laboratory findings and MRA or CTA results.

References

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