

# Ipsilateral cerebral abscess and endophthalmitis from an infected external carotid artery coil

<sup>1</sup>Jolene C. Rudell MD PhD, <sup>2</sup>Gregory Y. Chang MD

<sup>1</sup>Department of Ophthalmology & <sup>2</sup>Neurology, UC Davis Medical Center, California, USA

## Abstract

Simultaneous endophthalmitis and ipsilateral cerebral abscesses are uncommon. This is the case report of a 68 years old man with left peritonsillar squamous cell carcinoma, who had coils placed in the external carotid artery to induce arterial thrombosis and slow tumor growth. The patient subsequently developed left sided endophthalmitis and left brain abscess. This shows that the coils are able to serve as a nidus of infection resulting in secondary endophthalmitis and brain abscess in an immunocompromised host.

## INTRODUCTION

Radiation treatment and recently, the use of endovascular coil to limit perfusion and slow tumor growth are treatment modalities in the management of head and neck cancer. Ischemic infarctions are well known complication of previous radiation for neck cancers in neurologic literature. However, delayed ipsilateral hemispheric and ocular infections are rarely reported. This is the case report of an elderly man which illustrates that coil placement in the proximal external carotid artery in peritonsillar squamous cell cancer may have resulted in coil infection leading to ipsilateral endophthalmitis and cerebral abscesses.

## CASE REPORT

A 68 year-old man underwent radiation and chemotherapy for locally invasive left peritonsillar squamous cell carcinoma 5 months earlier. Several coils were placed in the proximal left external carotid artery resulting in anterograde external carotid artery thrombosis to slow tumor growth. One month later he underwent tooth extraction. One week prior to admission he complained of left eye pain. On admission he was febrile, stuporous with a hypopyon and vitritis in the left eye, consistent with endophthalmitis. Brain CT revealed nonspecific left cerebral hypodensity, and a spinal tap revealed 5,800 WBC/mm<sup>3</sup>, glucose 43 mg/dL, and protein 358 mg/dL. Blood and CSF cultures remained sterile while the patient was on antibiotics.

Echocardiogram was unremarkable. Ophthalmology service performed a vitreal tap

followed by intravitreal antibiotic injections. Subsequent vitreous culture yielded multiple organisms including *Streptococcus anginosus*, consistent with oral flora. Endoscopic pharyngeal examination was unrevealing. Brain MRI revealed multiple left cerebral ring-enhancing lesions consistent with septic embolism. Two days later, right facial twitching with secondarily generalized convulsive status epilepticus developed. Multiple antiepileptic drugs including continuous infusion of midazolam titrated to burst-suppression was given. Surgical intervention to remove the coil was deemed too risky. The patient was gradually stabilized on antibiotic treatment. The family opted for hospice care and he died 4 weeks after hospital admission. Autopsy was refused.

## DISCUSSION

In immunocompetent hosts, infectious complications from intracranial coil placement is rare. Successful coil placement as the main treatment for an infectious mycotic aneurysm further support its safety profile.<sup>1</sup> However when the infection does occur, localized cerebral abscess adjacent to the coil placement is the rule.<sup>2</sup>

In our patient who was immunosuppressed following chemotherapy, cerebral abscess and endophthalmitis ipsilateral to the side of external carotid artery coil placement occurred. We speculate that the coil placement with subsequent anterograde thrombosis created an ischemic region ideal for anaerobic bacterial growth following a tooth extraction. Retrograde flow from the infected coil in the proximal external carotid artery to the internal carotid artery resulted in showering of bacteria via the ipsilateral ophthalmic artery and

Address correspondence to: Gregory Y. Chang, MD, Department of Neurology, University of California at Davis Medical Center, 4860 Y St. Suite 3700, UC Davis Medical Center, Sacramento, CA 95817, USA. Tel: 916-734-6280, email: gycchang@ucdavis.edu

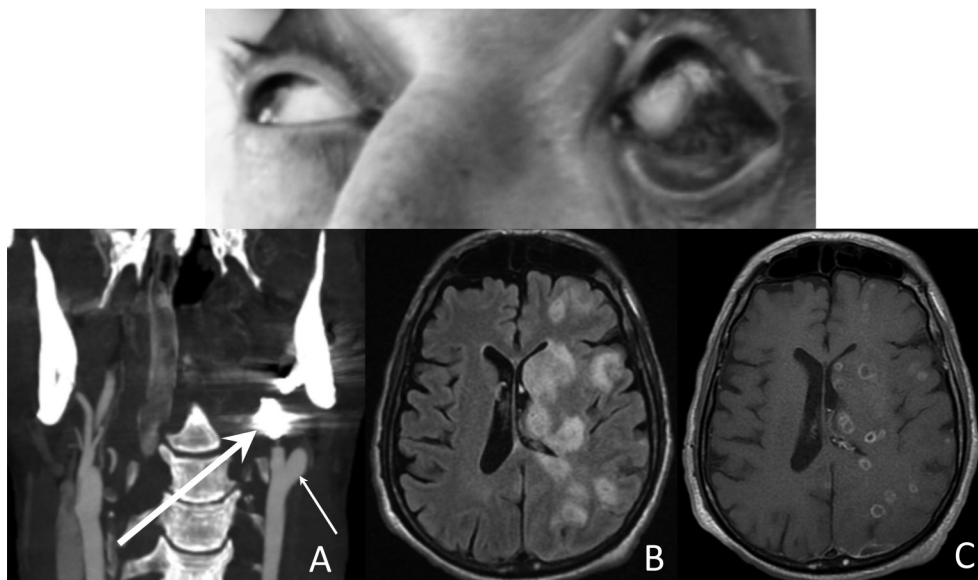


Figure 1. Top panel: Left eye shows marked conjunctival hemorrhage and corneal clouding.

Bottom panel: (A) Cervical CT angiogram, AP view, reveals tightly packed coils in the left external carotid artery (large arrow), and the left internal carotid artery adjacent to the bifurcation (small arrow). Axial brain MRI slices (B, C) shows multiple areas of high signal intensities over the left cerebral cortex on FLAIR sequence (B). Multiple ring-enhancing lesions on gadolinium-enhanced T1 sequences over the same distribution is consistent with multiple septic embolism (C).

cerebral arteries. Endogenous endophthalmitis often results from a hematogenous source, most commonly from endocarditis.<sup>3</sup> However, in our patient, the cerebral and ocular involvement ipsilateral to the coil placement with normal echocardiogram points to the coil as the nidus of infection. Although a recent report of delayed hypersensitivity syndrome to nickel in the coils may have a nearly identical ipsilateral MRI appearance<sup>4</sup>, the vitreous culture result, purulent meningitis, and a favorable response to antibiotic use in this case suggest distant metastatic abscess as the correct diagnosis.

Despite the fulminant endophthalmitis and cerebral abscesses accompanied by purulent meningitis complicated by a subsequent status epilepticus, clinical stabilization followed with intravenous antibiotics and antiepileptic drugs. There are also previous reports of favorable outcome without the coil removal.<sup>2,5</sup>

Strategic coil placement with resultant arterial thrombosis is frequently employed to “strangulate” tumor growth. Presence of a foreign body in an ischemic region following chemotherapy is an ideal setting for a nidus of infection. Although unusual, an ipsilateral encephalitis-cerebritis with mycotic aneurysms have also been reported from an infected coil

seeding distally.<sup>6</sup> However, we are unaware of a concurrent ipsilateral endophthalmitis and cerebral abscesses as presented here.

## DISCLOSURE

Conflicts of interest: None

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