

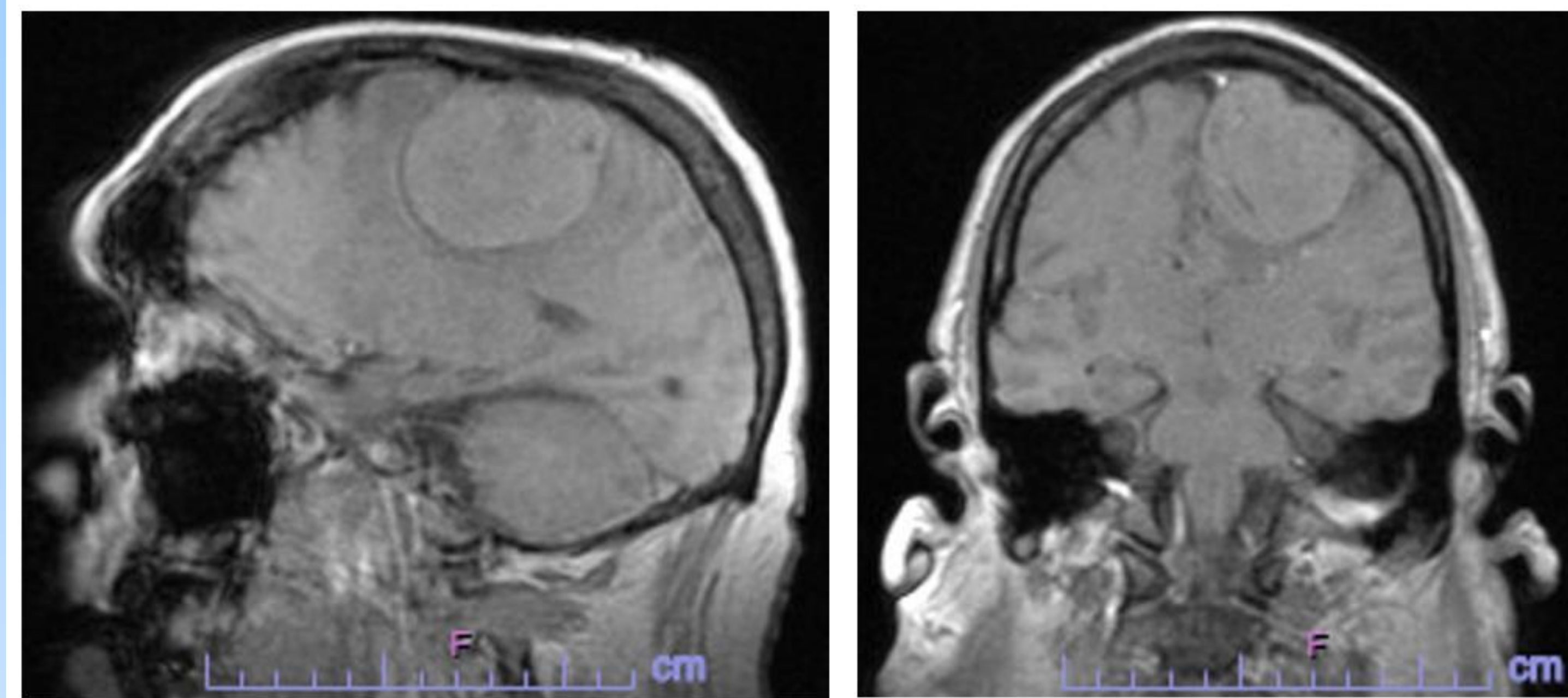
INTRODUCTION

Complex regional pain syndrome (CRPS) is characterized by continuous regional pain with autonomic and inflammatory features, disproportionate to the time or degree of usual course to any known trauma.¹ In order to be diagnosed, at least one symptom in three out of four of the following categories must be present: sensory (hyperalgesia/allodynia), vasomotor (temperature asymmetry), sudomotor/edema (swelling), and motor/trophic (motor dysfunction/weakness). Two types of CRPS exist, type 1 and type 2. Type 1 CRPS (CRPS-1), also referred to as reflex sympathetic dystrophy, is characterized by a chronic severe, continuous pain in a limb, and can often be caused by trauma or surgery, although the nerve in the affected limb has not been directly damaged, in contrast to Type 2 CRPS (CRPS-2), in which specific nerve damage has occurred. CRPS-1 as a phenomenon in cancer has been previously characterized, with authors noting around 5% of patients with brain cancer may develop CRPS-1.¹ This abstract highlights a patient with a diagnosis of parasagittal hemangiopericytoma who initially presented with symptoms of lumbar radiculopathy unsuccessfully treated with lumbar and thoracic laminectomy with improvement after brain tumor resection. This patient's clinical course was further complicated with symptoms of CRPS-1 in the months following resection of his brain tumor.

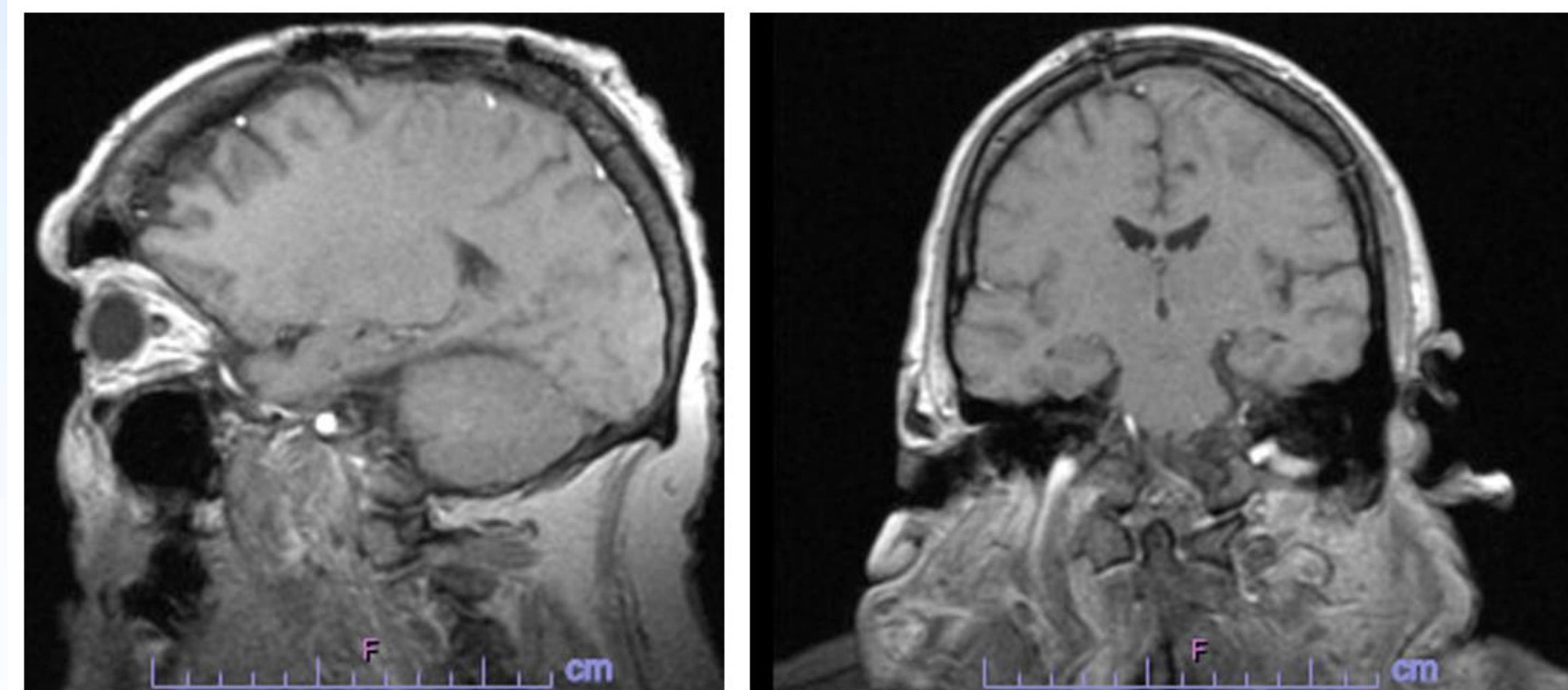
CASE SUMMARY

The case involves a male in his 60s who presented from an inpatient rehabilitation home for low back pain and right arm shaking. The patient had a history of post-laminectomy syndrome, neurogenic claudication, and bilateral lower extremity muscle spasms and numbness/tingling of the legs ever since having lumbar/thoracic laminectomy and fusion 4 years prior. Additionally, he developed right arm weakness and numbness, as well as uncontrolled shaking of this extremity for one month. At the time of consultation, he presented with spastic leg pain and weakness bilaterally, exaggerated pain response to light touch, and temperature asymmetry between upper and lower limbs, fitting a diagnosis of CRPS-1 as determined by the Budapest Criteria (Table 1). Multi-modal therapy, including physical therapy and medication, were used to alleviate his symptoms, with physical therapy providing the most profound improvement. Following the surgical removal of his parasagittal hemangiopericytoma (Images 1-4), the patient reported improvement in motor function and sensory function in his bilateral upper and lower extremities over the course of several months despite persistence of lower extremity pain. He was transferred to a skilled nursing facility for continuation of care after 5 months in the hospital.

DATA/IMAGES



Images 1 and 2: Presence of extra-axial mass in the superior left paramedian dura with surrounding vasogenic edema. Image 2 demonstrates rightward shift of midline structures at the location of the mass.



Images 3 and 4: Postsurgical MRI following craniotomy and resection of parasagittal mass previously seen at the superior left paramedian dura along the left frontal region.

DISCUSSION

CRPS and conditions associated with post-operative pain can create a complex clinical picture requiring a unique approach to treatment. Previous research has considered various mechanisms by which CRPS develops, including: 1) peripheral inflammation or autoimmunity via release of pain-producing peptides, 2) catecholamine hypersensitivity by virtue of sympathetic overactivity and formation of a reflex arc, 3) central sensitization by development of increased nociceptive response to peripheral stimuli; and 4) possible genetic components contributing to development of symptoms following an inciting event.¹⁻³ In the post-laminectomy course, in conjunction with brain cancer and its treatment as seen in this patient's case, this can lead to challenging pain disorders.^{2,3} Multi-modal treatment including medication and progressive physical rehabilitation may provide relief for patients affected by such pathologies.

Table 1: Budapest Diagnostic Criteria for CRPS⁵

Category	Sign and Symptoms
Sensory	Hyperesthesia or allodynia (pain to light touch). Temperature sensation, deep somatic pressure or joint movement, hyperalgesia to pin prick
Vasomotor	Temperature asymmetry, skin color changes, skin color asymmetry
Sudomotor/edema	Edema, sweating changes, or sweating asymmetry
Motor/trophic	Decreased range of motion, motor dysfunction (weakness, tremor, dystonia), or trophic changes (hair, nail, skin)

All of the following must be met for diagnosis: 1) Continuing pain out of proportion to inciting event; 2) At least one sign in two or more of the following categories above; 3) At least one symptom in three or more of the categories above; 4) No other diagnosis can better explain the signs and symptoms

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