AMSER Case of the Month: October 2018

59 year old male presents with symptomatic progressive right posterior frontoparietal brain mass

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Patient Presentation

CC/HPI: 59 year old male with hx of abnormal enhancement on brain MRI three months prior, presents to ED after a fall 2/2 progressive decreased strength in LUE and LLE now resulting in complete left sided hemiplegia. Complaining of headache and left shoulder pain on arrival.

PMHx: TIA, HTN, GERD, DM, COPD, CAD, PVD, recent cerebritis and intracerebral bleed

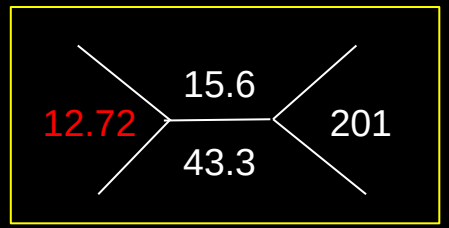
PSHx: Bilateral femoral artery bypass graft, coronary artery bypass graft s/p stent placement, left femoral endarterectomy, left iliac stent placement

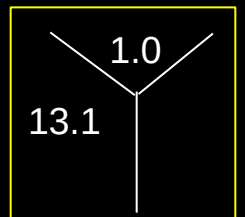
Medications: Aspirin 81mg, cilostazol 50mg, finofibrate 145mg, gapapentin 800mg, insulin degludec 100unit/mL, insulin lispro 100unit/mL, isosorbide mononitrate 60mg, lisinopril 20mg, lovastatin 40mg, metformin 1000mg, metoprolol 50mg, nicotine 14mg/24hr, nitroglycerin 0.4mg

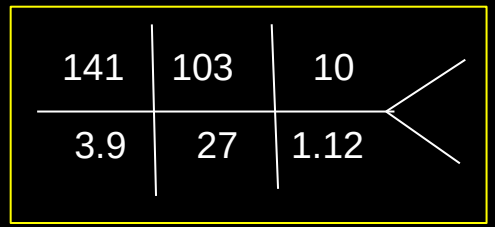
Physical Exam and Labs

- GCS: 4 – Spontaneous 4 – Confused 6 – Obeys Commands
- Neuro: Ox2, EOS, PERRL, EOMI, FC x R, L hemiplegia, sensory loss to LT and PP over LHB face sparing
- Cardiac: RRR; no MRG
- Abdomen: Soft, NT, non-distended, normal bowel sounds
- Extremities: (+) pulses, no deformities
- Skin: No cyanosis, normal turgor
- Psych: Appropriate mood and affect, fluent in speech and cognition

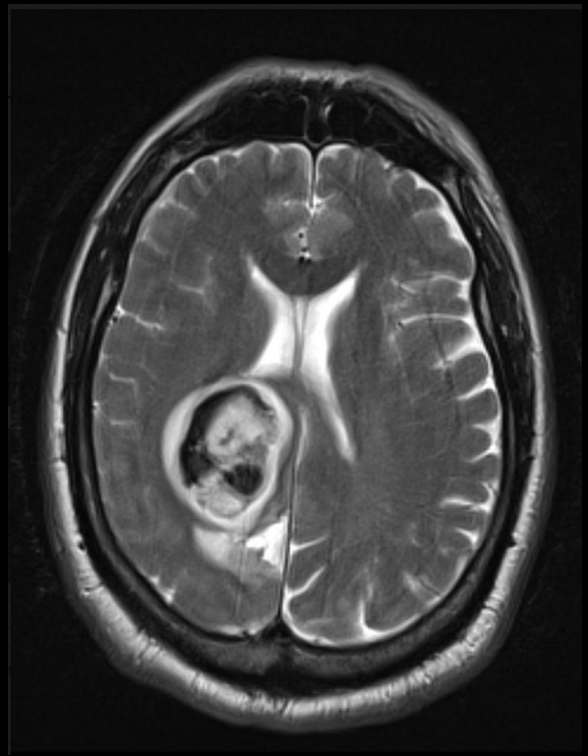
BP 130/65 (SBP 220 at OSH)
HR 64 RR 15
SO2 100% @RA

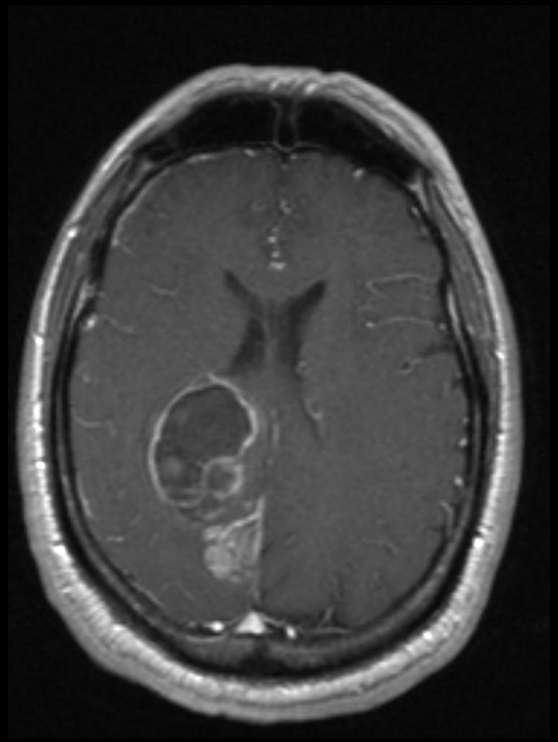


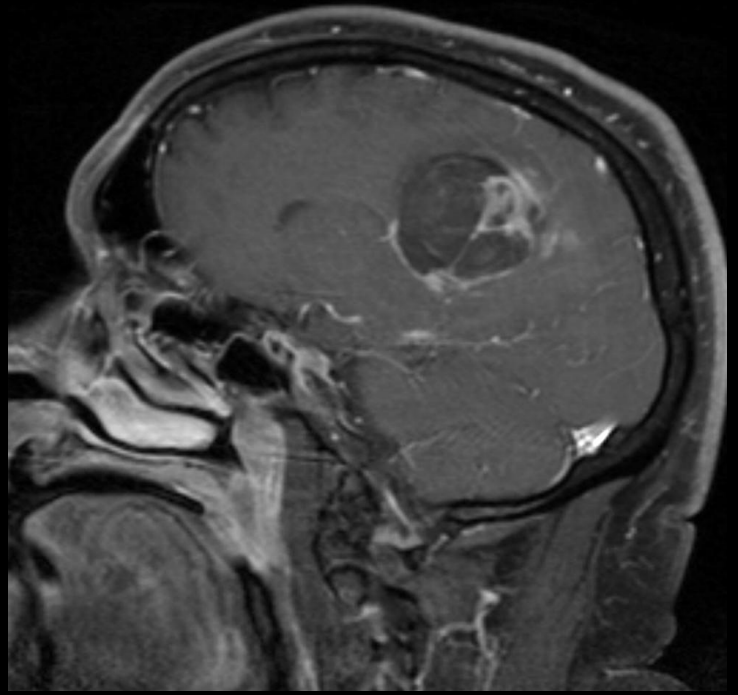




Imaging 06/24/2018







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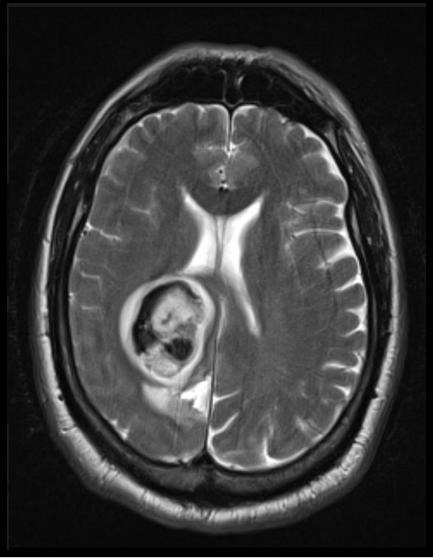
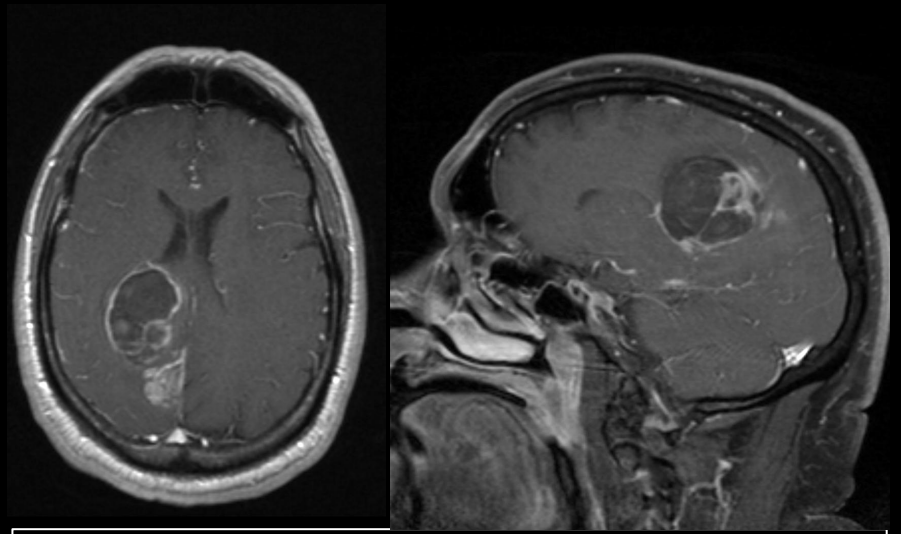


T2-weighted image

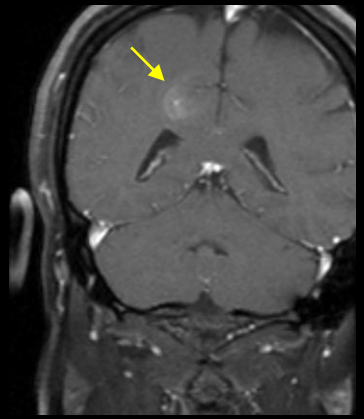
An acute intraparenchymal hematoma is centered on the right peri-atrial region with surrounding vasogenic edema and local mass effect

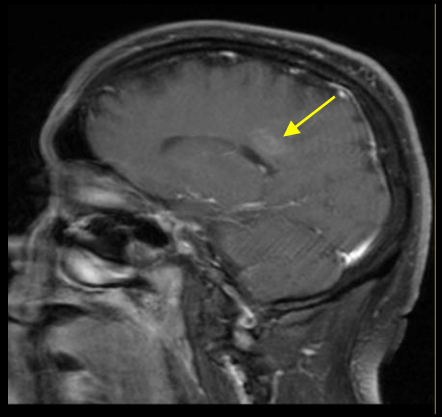


T1-weighted image, post contrast

Surrounding the hematoma is a rim of contrast enhancement with some nodularity. There is also a more confluent heterogeneous area of enhancement posterior and medial to this lesion.

Of note, this patient had been imaged March 2018





Patient initially presented to the ED in March 2018 with three weeks of inability to walk 2/2 weakness of LLE. MRI showed region of abnormal enhancement, requiring further workup.

Impression: Abnormal signal, ill-defined pathologic gadolinium enhancement and local sulcal effacement within the medial left parietal lobe without significant hemorrhage or shift of midline structures.

Patient underwent metastatic workup at AGH and was discharged on 03/31/2018 with instructions to follow up as outpatient to find underlying cause of ICH.

Differential Diagnosis based on 06/24/2018 imaging

- Primary CNS neoplasm with hemorrhage, such as glioblastoma
- Metastasis
- Lymphoma

Pathology from biopsy 06/26/2018

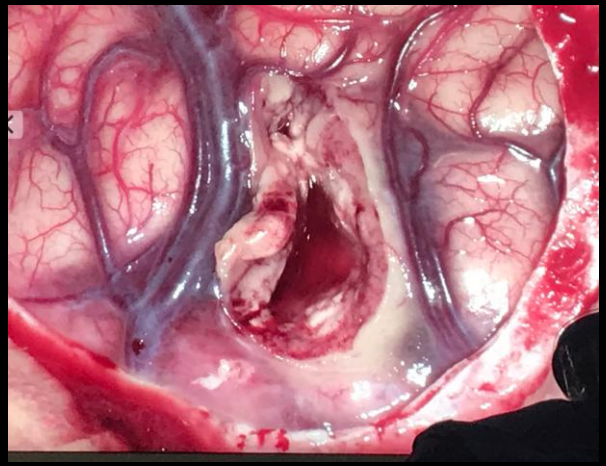
Twist drill craniotomy and biopsy utilizing Neuronavigation performed
Two surgical specimens were collected, one frozen and one permanent

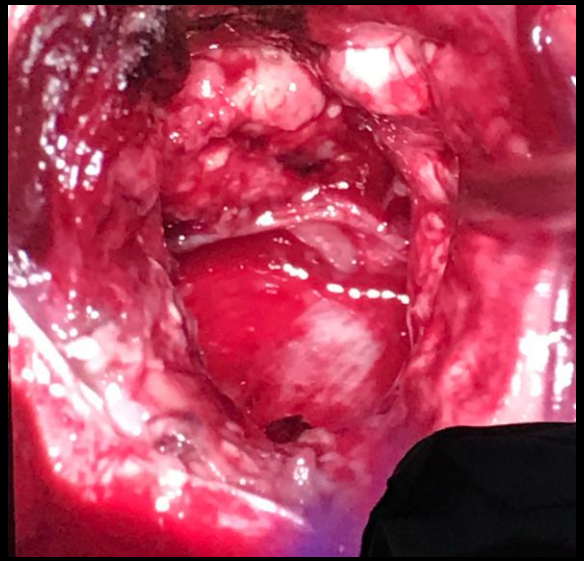
Immunohistochemical stains for glial fibrillary acidic protein, CD45 and the mutant form of IDH-1, with appropriately stained controls, were used in the evaluation.

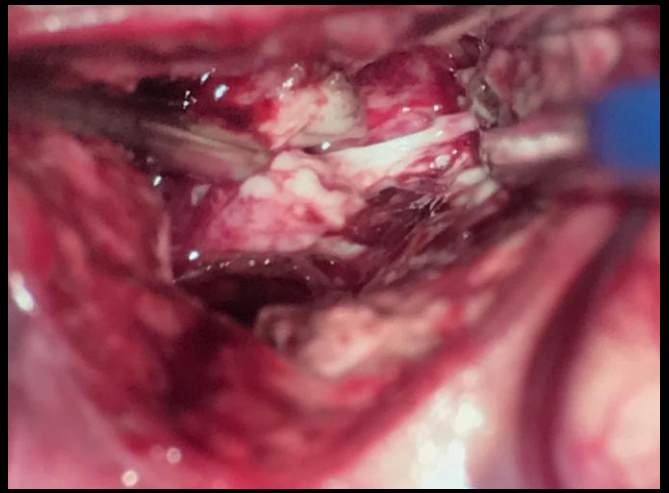
FINAL DIAGNOSIS = GLIOBLASTOMA, IDH-WILDTYPE, WHO GRADE IV

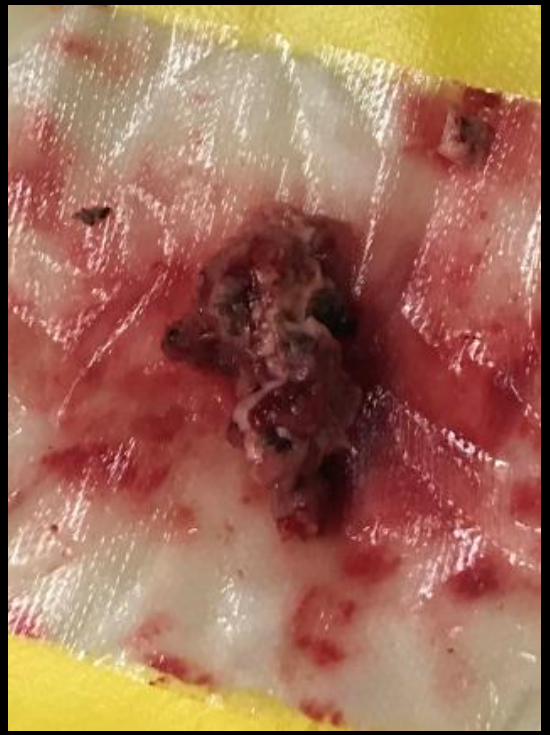
Surgery then planned for 07/09/2018 for complete resection of mass

Intraoperative photographs



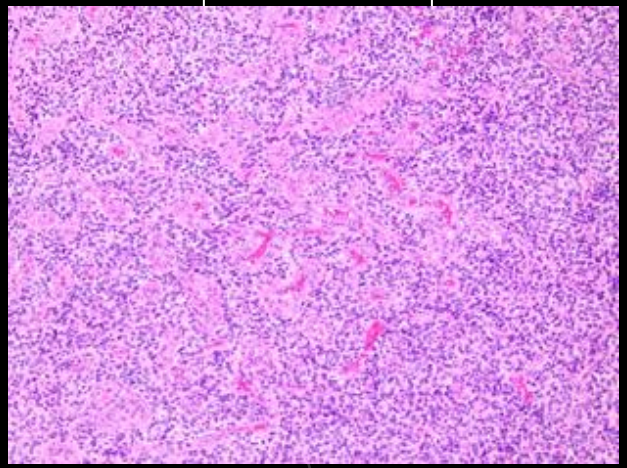






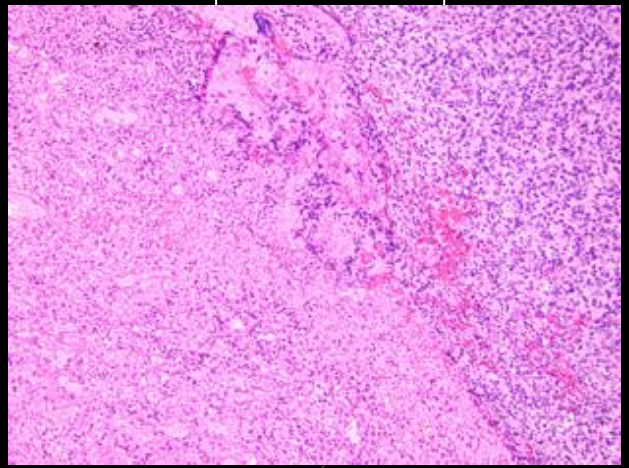
H&E stains of Surgical Specimen

Low Power



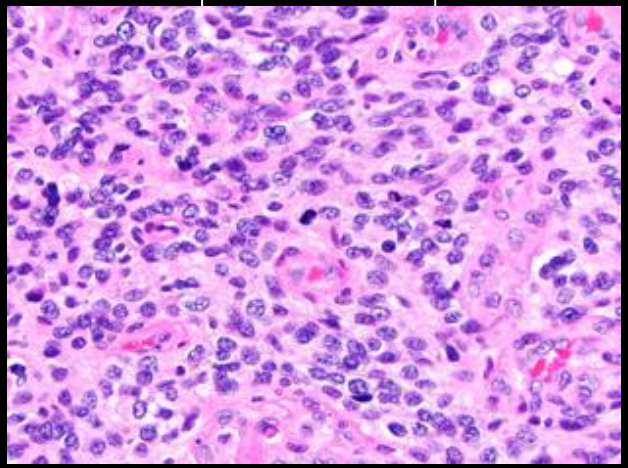
Microvascular proliferation

Low Power



Hypercellularity and
Focal areas of necrosis

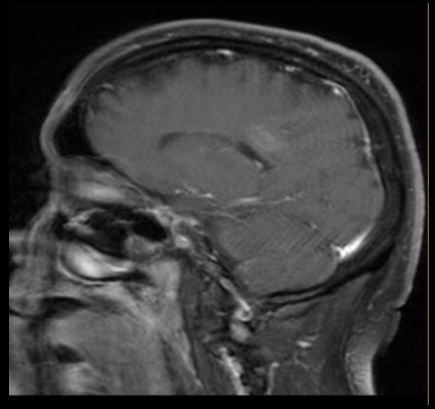
High Power



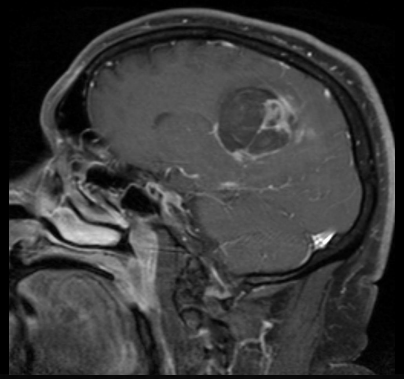
Nuclear atypia and
mitotically active figures

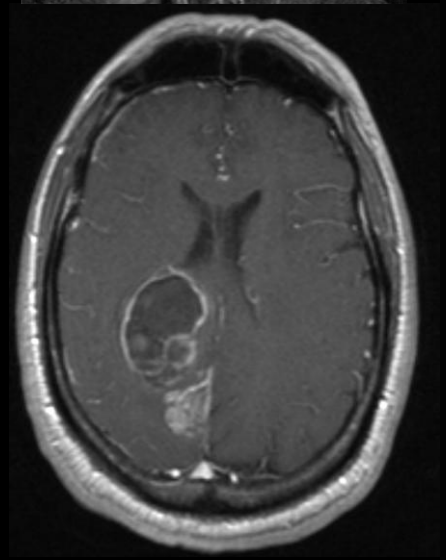
Sections demonstrate mitotically active, poorly differentiated malignant neoplasm which is strongly GFAP-positive and GD45-negative. Focal areas of necrosis and microvascular proliferation are present. The lesion is IDH-1 negative.

03/28/2018

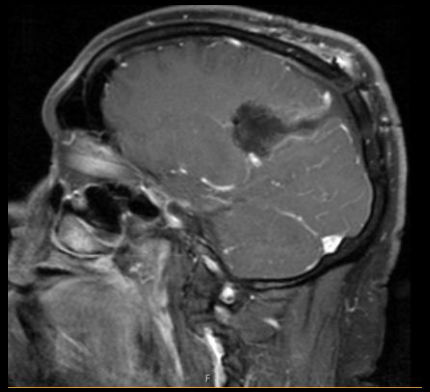


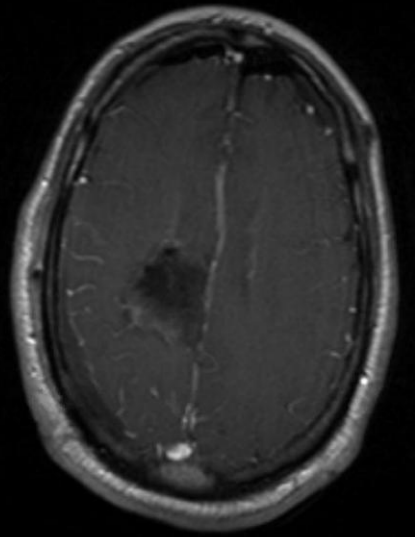
06/24/2018





Post-surgery 07/10/2018





Progression of lesion:
Rapid progression of lesion seen over three months, with subsequent post surgical changes after parietal craniotomy with complete resection of mass. Compared to prior imaging, there is no longer evidence of nodular enhancement seen along margins of resection cavity, nor effacement of adjacent cerebral sulci/ventricular system.

Glioblastoma

High-grade gliomas are malignant, often rapidly progressive

Divided into anaplastic gliomas (anaplastic astrocytoma, anaplastic oligodendroglioma) and glioblastoma based upon histopathologic and molecular features

Patients typically present with subacute neurologic signs and symptoms that progress over days to weeks

MRI of the brain confirms evidence of mass lesion, but tissue diagnosis is required to distinguish high-grade gliomas from other primary and metastatic brain tumors

Most common presenting symptoms include headache (50-60%), seizures (20-50%), and focal neurologic symptoms such as memory loss, motor weakness, visual symptoms, language deficit, and cognitive and personality changes (10-40%)

Glioblastoma Management

Contrast-enhanced MRI is superior to CT for characterization of brain tumors

> On MRI, high-grade gliomas are typically T2 hyperintense and enhance heterogeneously following contrast administration. Typically have a pattern of intense rim enhancement with central clearing, indicative of necrosis.

Newly diagnosed high-grade gliomas: Recommend maximal surgical resection with preservation of neurologic function rather than biopsy

Most important factors affecting outcome and survival in high-grade glioma are age, performance status, histologic tumor type and grade, and increasingly well-characterized molecular factors

References

Clinical Radiology: The Essentials. Dr. Richard H. Daffner, Dr. Matthew Hartman, Fourth Edition.

UpToDate: https://www.uptodate.com/contents/clinical-presentation-initial-surgical-approach-and-prognosis-of-high-grade-gliomas?search=glioblastoma%20IDH%20wildtype%20WHO%20grade%20iv&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1