Cerebral Parenchymal Arteriovenous Malformation (AVM)

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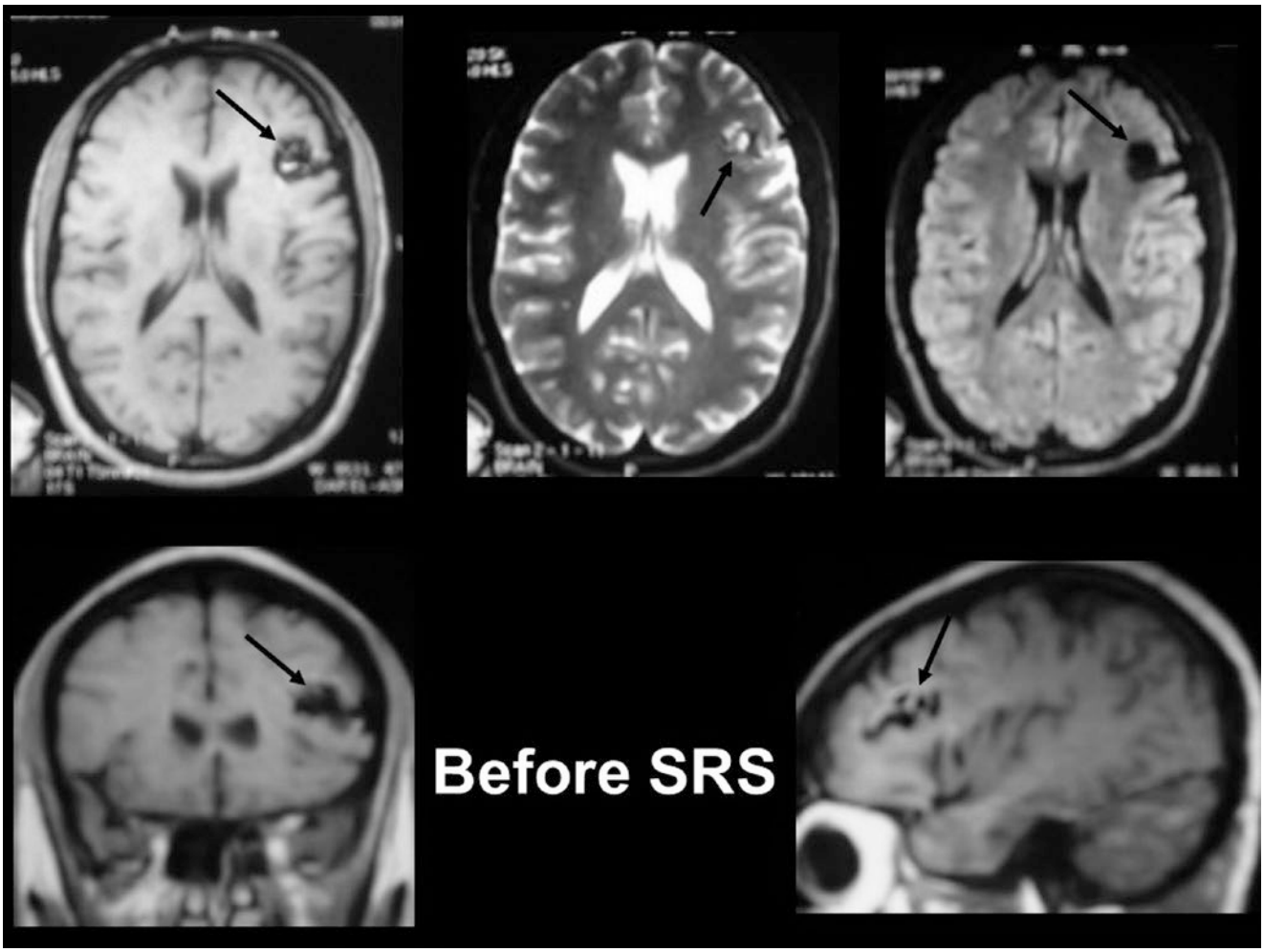
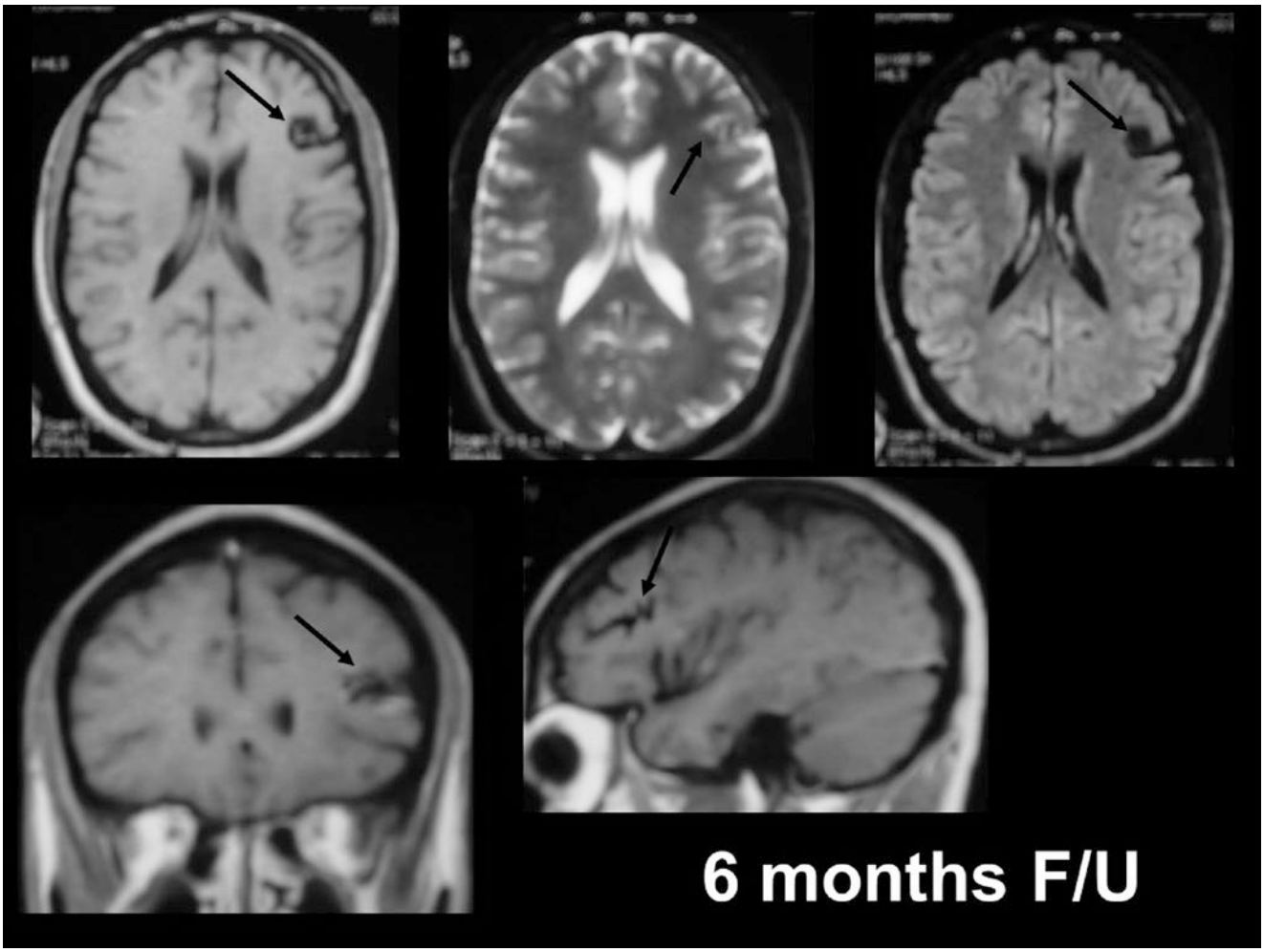
- **Demographics:** Male; 24 years
- **Initial Presentation:** Epilepsy for 7 months before radiosurgery treatment
- **Diagnosis:** Cerebral parenchymal AVM
- **Pre-radiosurgery Treatment:** None
- **Pre-radiosurgery Presentation:** Epilepsy (generalized tonic-clonic seizures)
- **Radiosurgery Treatment:**
  Upfront (primary); Linac-based SRS for left, frontal, parenchymal AVM
- **Radiosurgery Dosimetry:**
  - Target volume: 3.1 cc
  - Marginal dose: 25.6 Gy
  - Marginal isodose: 80%
  - Maximum dose: 33.0 Gy
  - Minimum dose: 24.6 Gy
  - Average dose: 31.7 Gy
  - Number of isocenters: 1
- **Follow-Up Period:** 96 months post-SRS
- **Clinical Outcome:**
  - 6 months post-SRS: Persistent seizures with medications
  - 24 months post-SRS: Infrequent seizures with medications
  - 36 months post-SRS: Controlled seizures with medications
  - 96 months post-SRS: Sustainable control of seizures with medications
- **Complications:** None
- **Radiological Outcome:**
  - 6 months post-SRS (MRI): Slight decrease in size of AVM nidus
  - 12 months post-SRS (MRI):
    Marked decrease in size of AVM nidus
    Appearance of perinidal high signal in T2 and FLAIR studies, denoting vasogenic edema
  - 24 months post-SRS (MRI):
    Non-visualized AVM nidus
    Appearance of small focal ring enhancing lesion at the site of prior AVM nidus, in T1 Gadolinium-enhanced study, denoting radiation necrosis
    Increased high signal, in T2 and FLAIR studies, surrounding the ring enhancing lesion at the site of prior AVM nidus
  - 30 months post-SRS (conventional angiography): Complete obliteration of AVM nidus
  - 57 months post-SRS (MRI):
    Appearance of large cystic lesion with slightly enhancing rim at the site of prior AVM nidus, in T1 Gadolinium-enhanced study, denoting radiation-induced parenchymal changes with cyst formation
    Markedly increased high signal in T2 and FLAIR studies around the radiation-induced large cyst
  - 81 months post-SRS (MRI):
    Regression in size of the heterogeneously enhancing cystic lesion at the site of prior AVM nidus, in T1 Gadolinium-enhanced study
    Persistent increased high signal in T2 and FLAIR studies around the residual small enhancing radiation-induced cyst
- **Post-radiosurgery Treatment:** Continued anti-convulsant medications

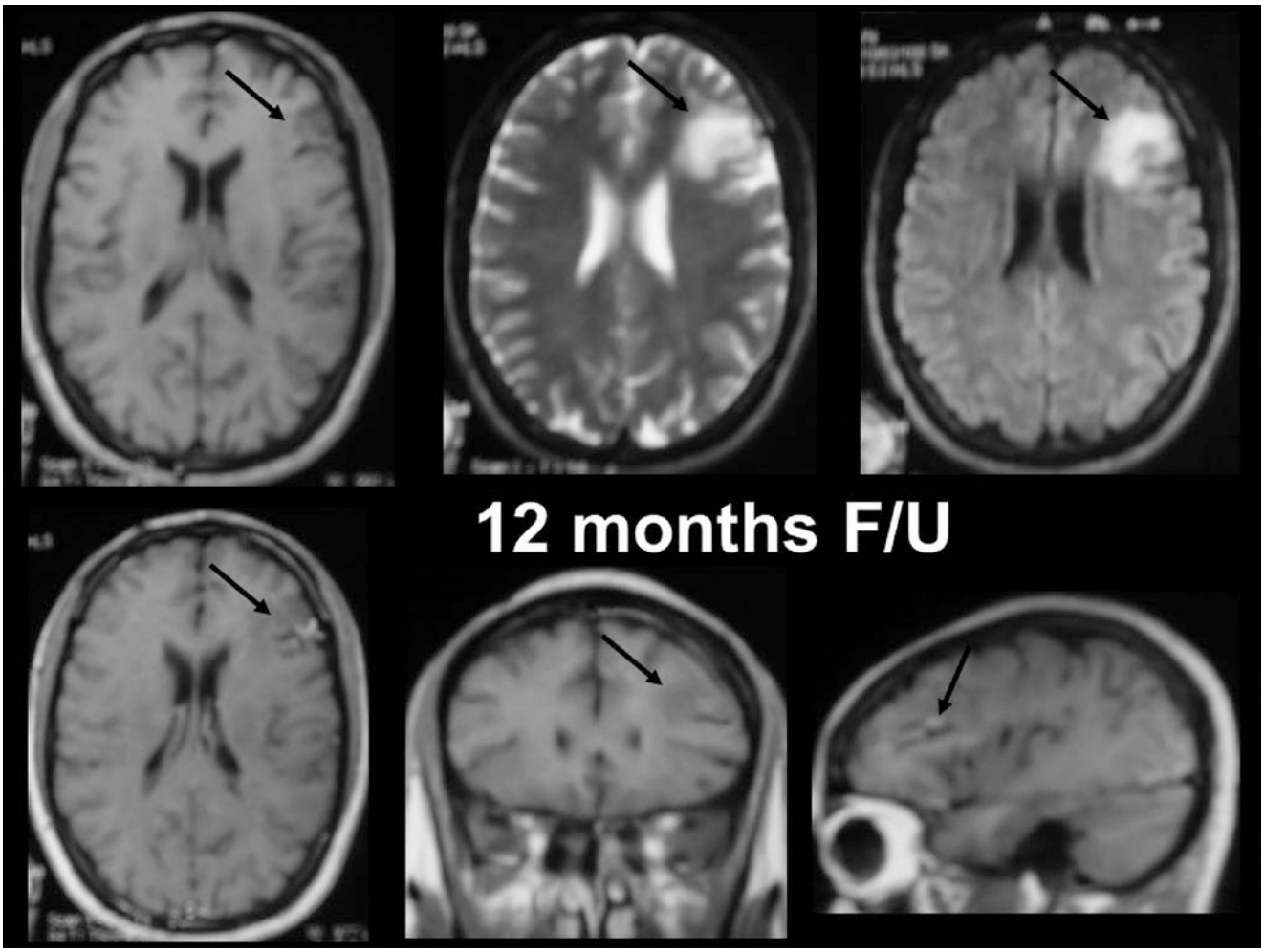
O. S. Abdelaziz, A. A. F. De Salles, *NeuroRadiosurgery: Case Review Atlas*, https://doi.org/10.1007/978-3-031-16199-5_10

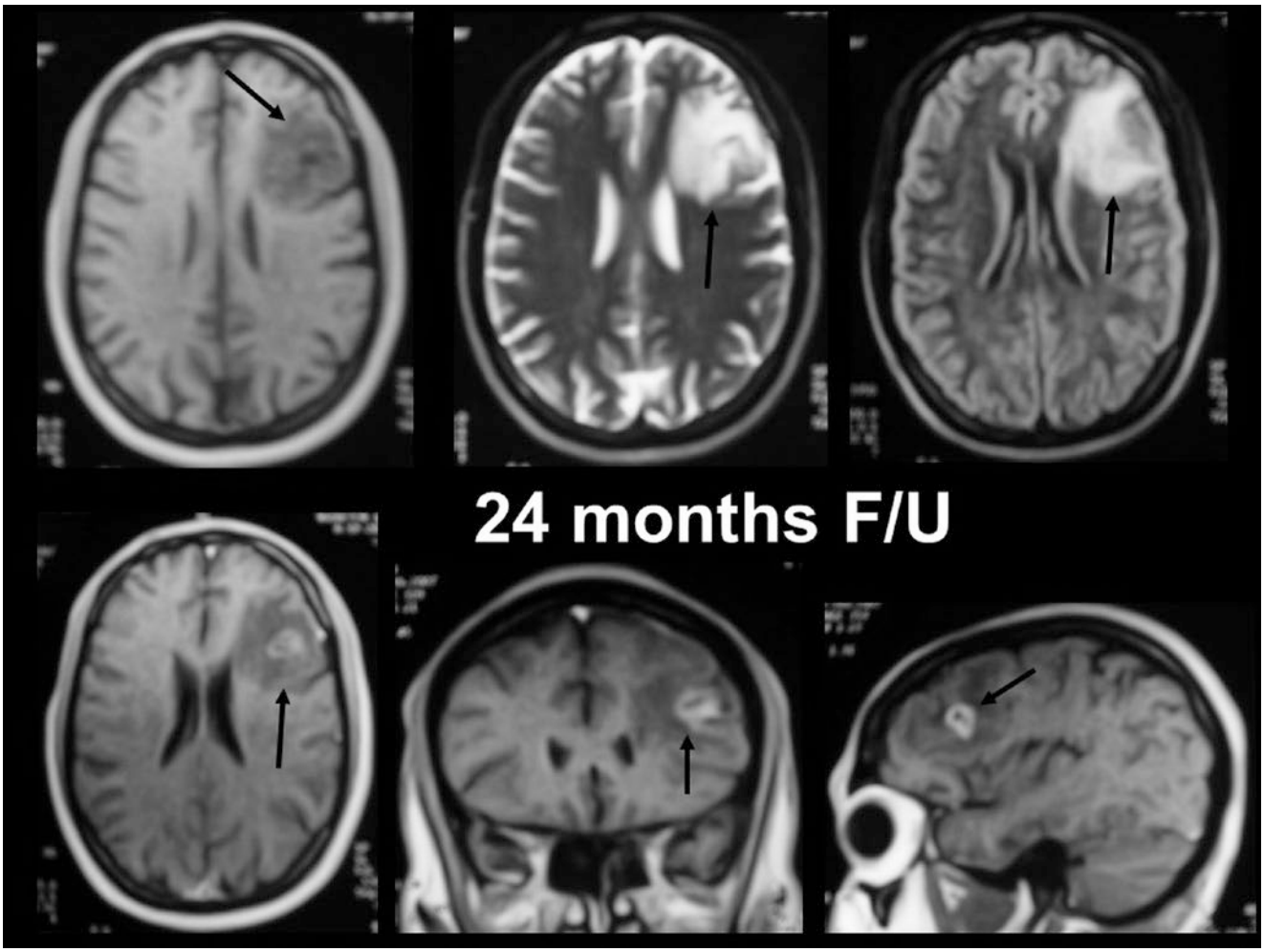

Before SRS

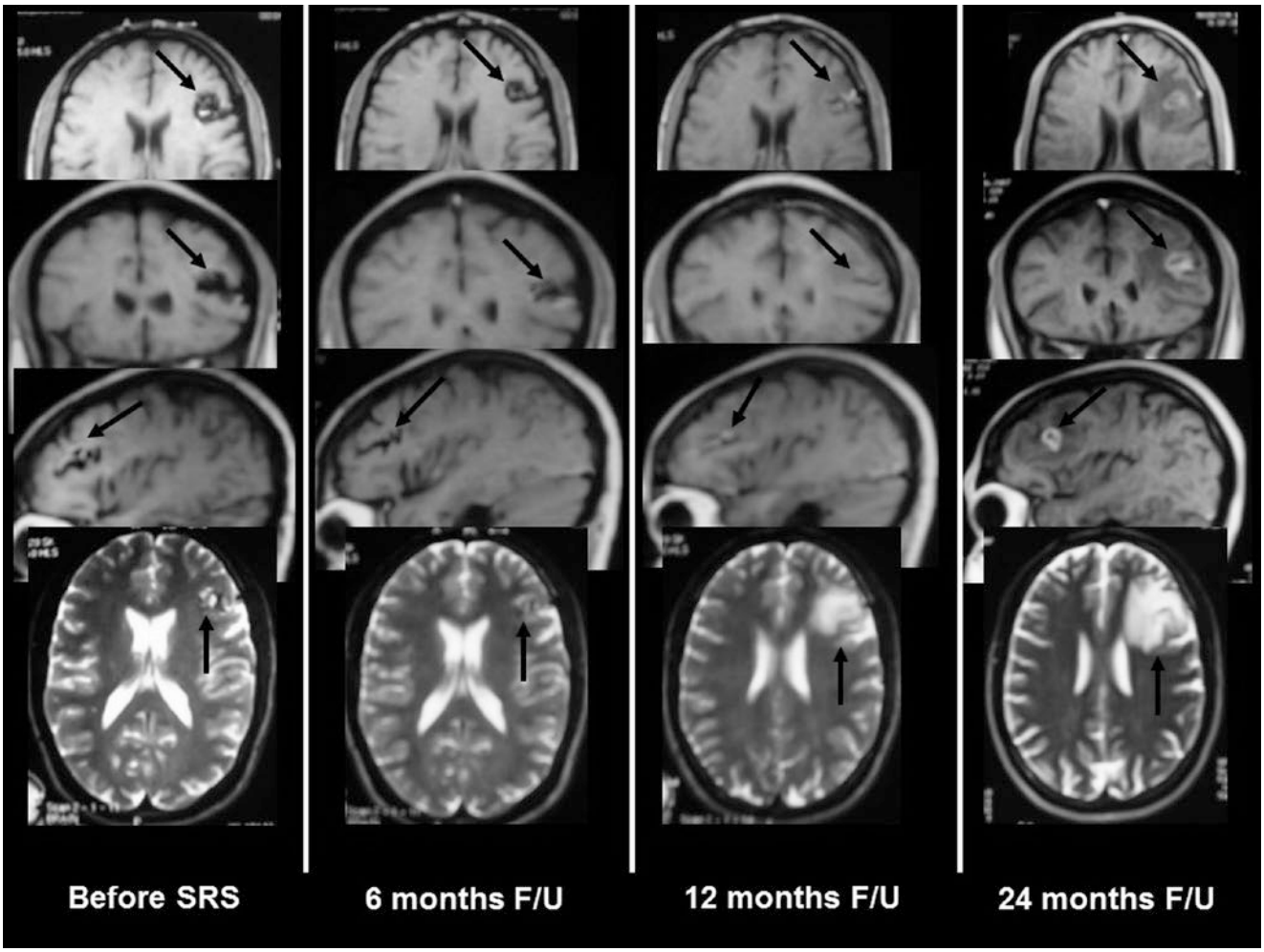

Before SRS

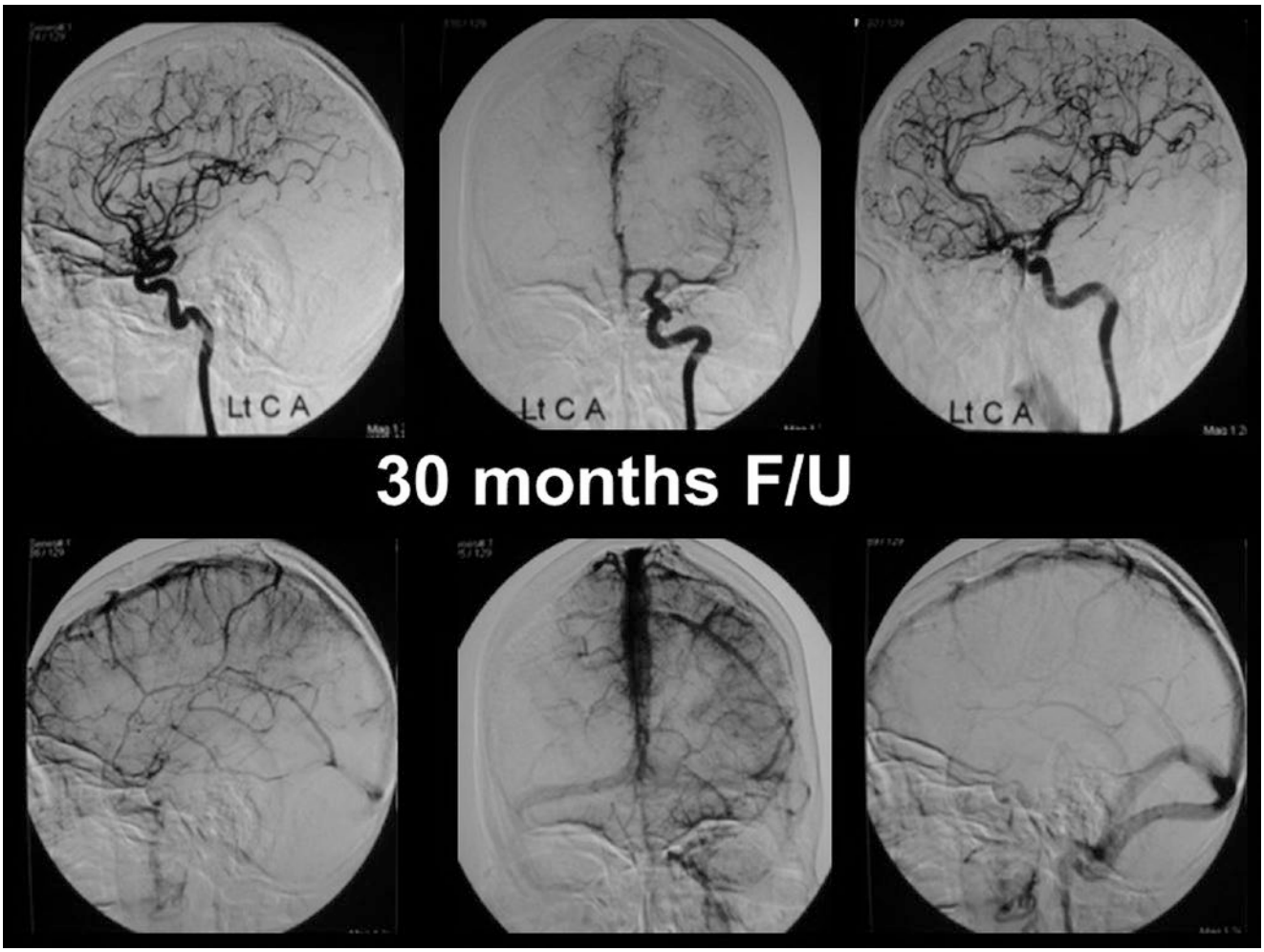

Before SRS

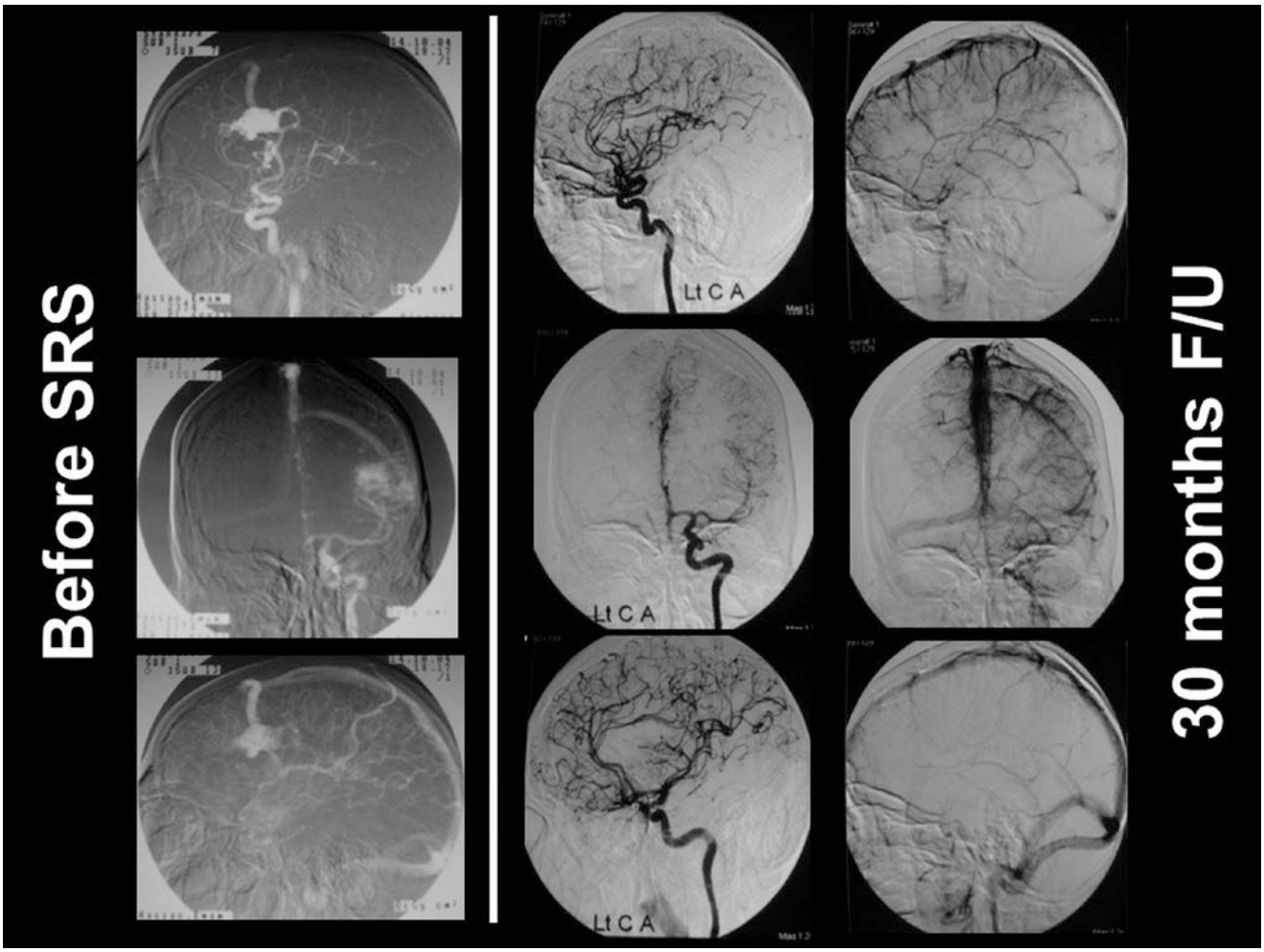

6 months F/U

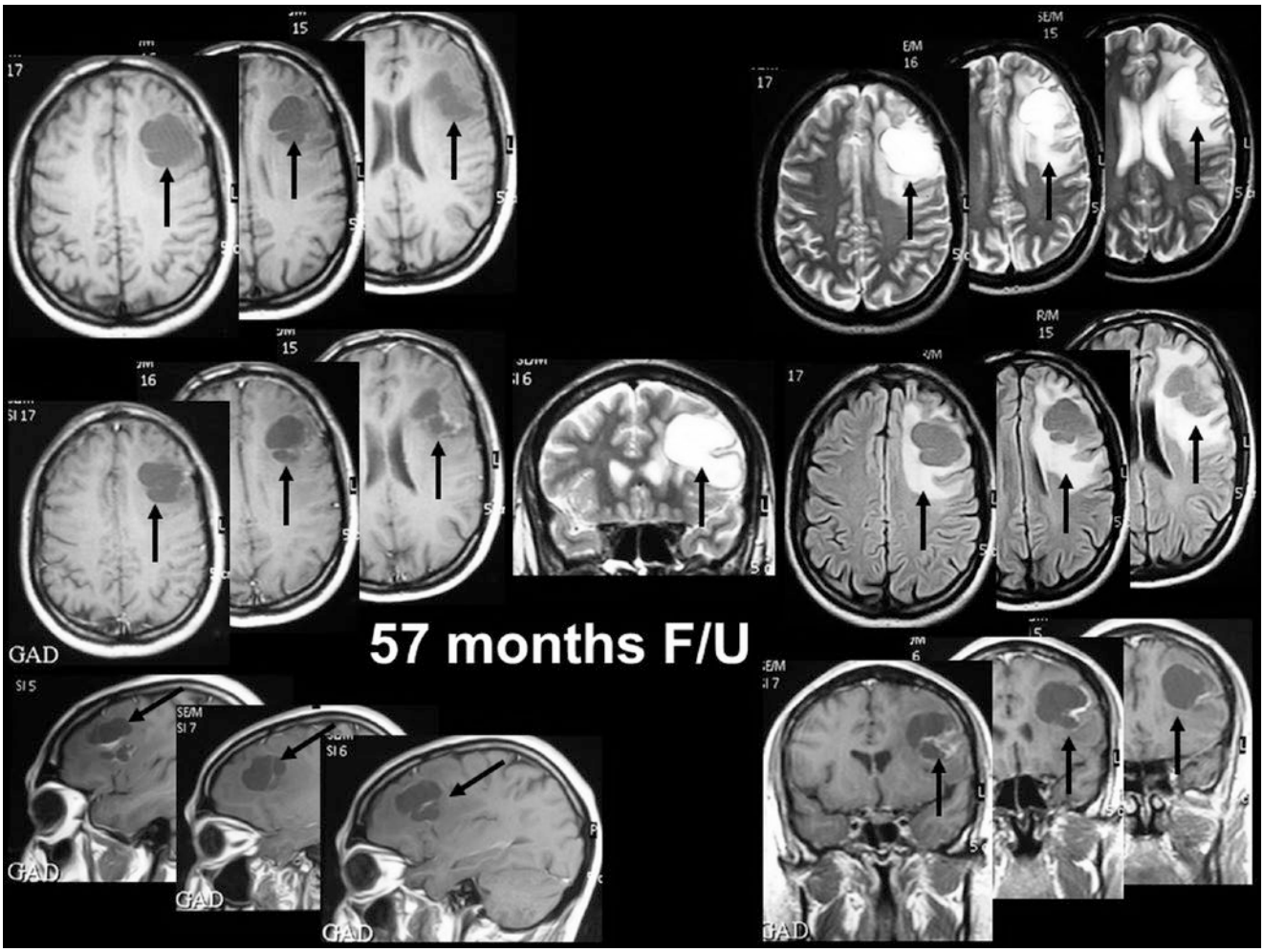

12 months F/U

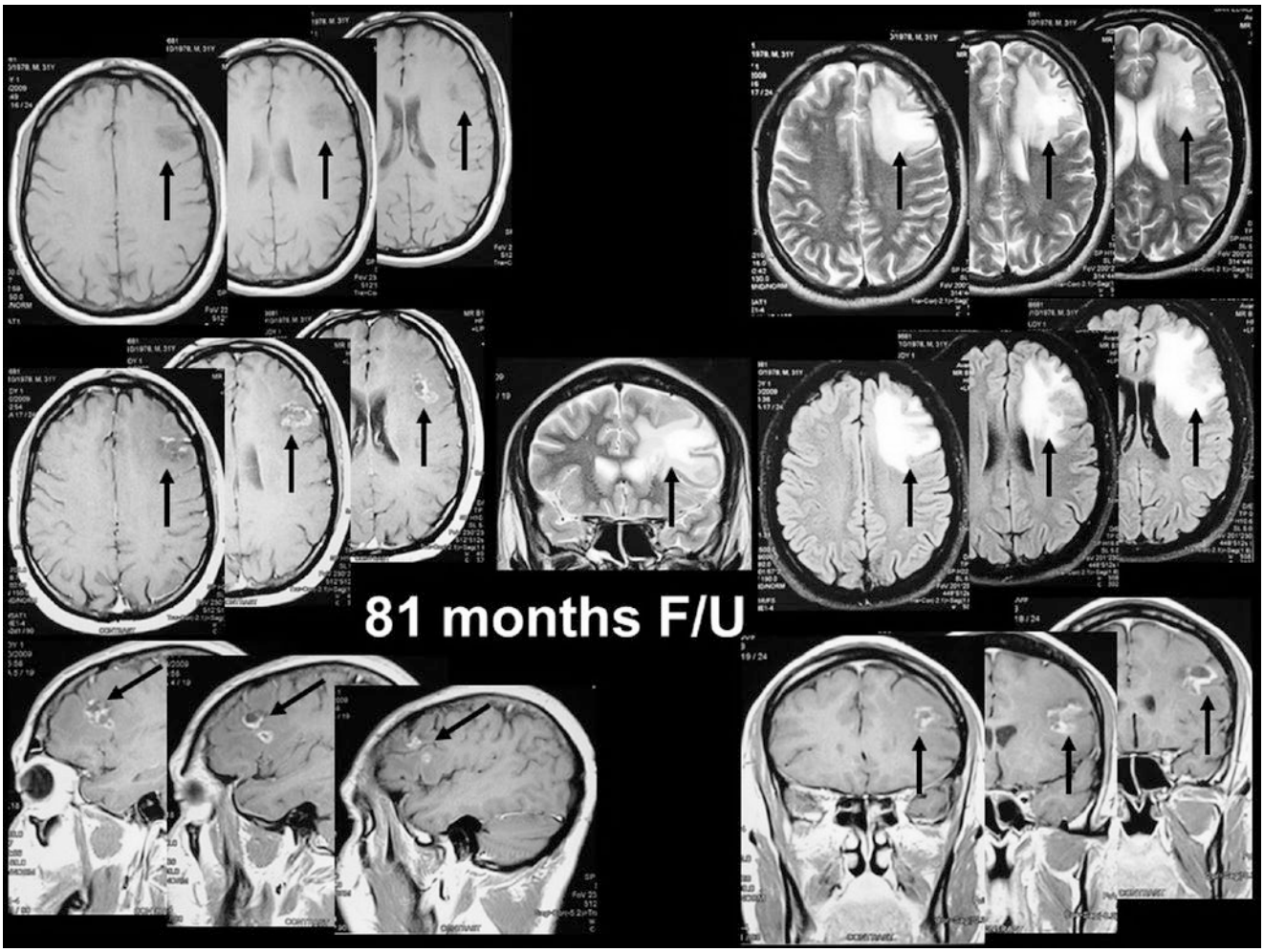

24 months F/U


Before SRS
6 months F/U
12 months F/U
24 months F/U


Lt CA
Lt CA
Lt CA
30 months F/U


Before SRS
Lt CA
Lt CA
Lt CA
30 months F/U


57 months F/U
GAD
GAD
GAD
GAD



Further Reading

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