AMSER Case of the Month December 2024

32-year-old man presents with headache, paraplegia, and altered mental status

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Clinical Information

Indication: 32-year-old man presents to the ED with headache, AMS, right-sided hemiparesis, slurred speech and lethargy

Past Medical History: CHF, hypercholesterolemia, HTN, and suspected amyloidosis

Medications: furosemide, Entresto, spironolactone, atorvastatin

Social History: Smoking and alcohol use.

Vitals: BP: 115/90, P: 89, RR:30, T: 97.7F, SpO2: 100%

Physical Exam: No movement of right upper or lower extremities. Slurring speech. Poor gag reflex.

Coagulation Studies: INR 1.3, PTT 25

Clinical Question and/or Clinical Differential Diagnosis

- What is the reason for this patient's headache, altered mental status, right-sided hemiparesis, and slurred speech?

- Differential diagnosis:
  - Ischemic stroke such as from embolic thrombus or arterial dissection
  - Hemorrhagic stroke such as intracerebral hematoma

What Imaging Should We Order?

ACR Appropriateness Criteria for the Indication

Variant 1: **Adult. Altered mental status. Suspected intracranial pathology or focal neurologic deficit. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
CT head without IV contrast	Usually Appropriate	☢☢☢
MRI head without and with IV contrast	May Be Appropriate	O
MRI head without IV contrast	May Be Appropriate	O
MRI head with IV contrast	Usually Not Appropriate	O
CT head with IV contrast	Usually Not Appropriate	☢☢☢
CT head without and with IV contrast	Usually Not Appropriate	☢☢☢

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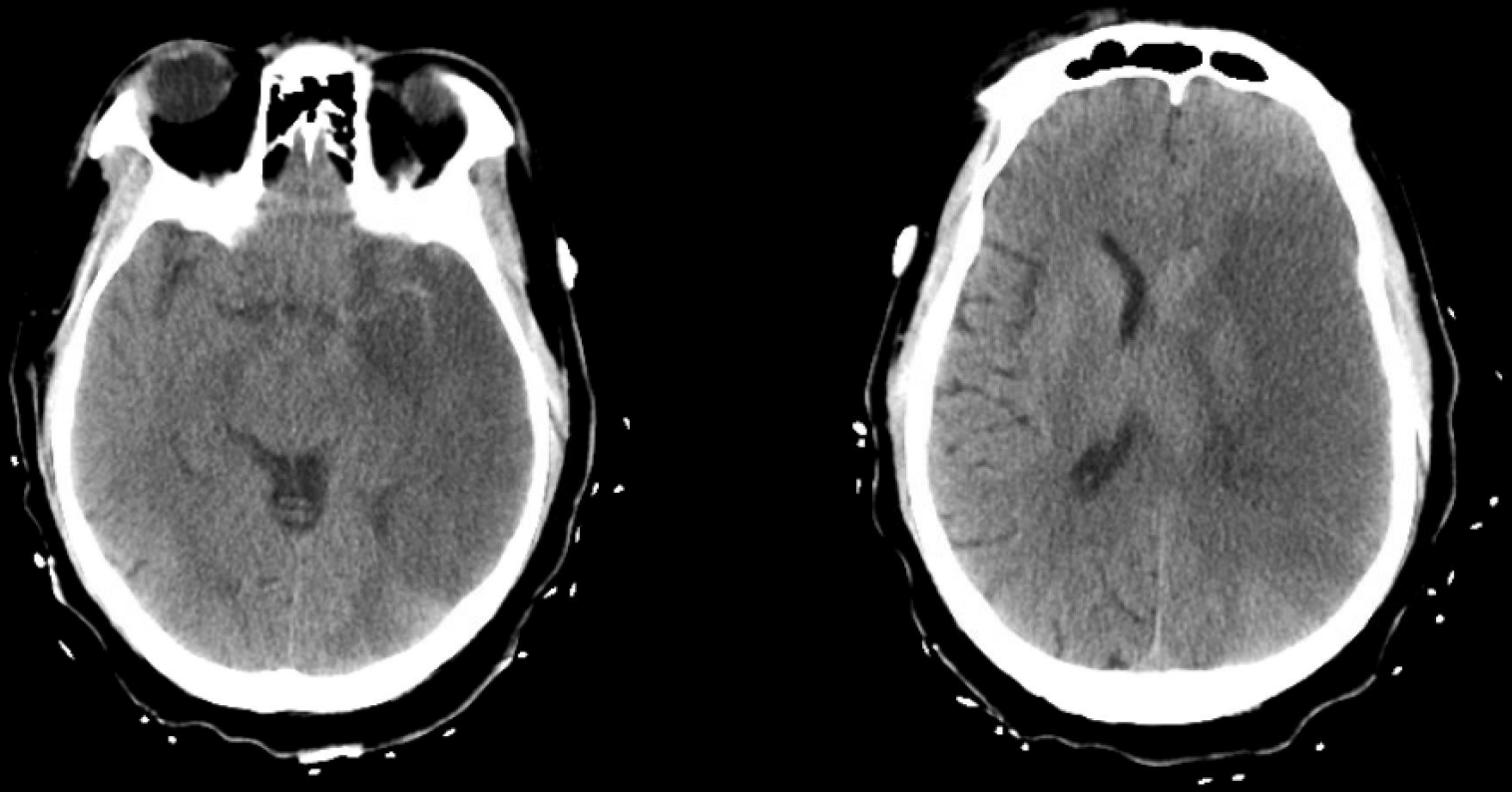
Imaging Study Obtained & Discussion of the Images

CT Head without IV contrast



Imaging Study Obtained & Discussion of the Images

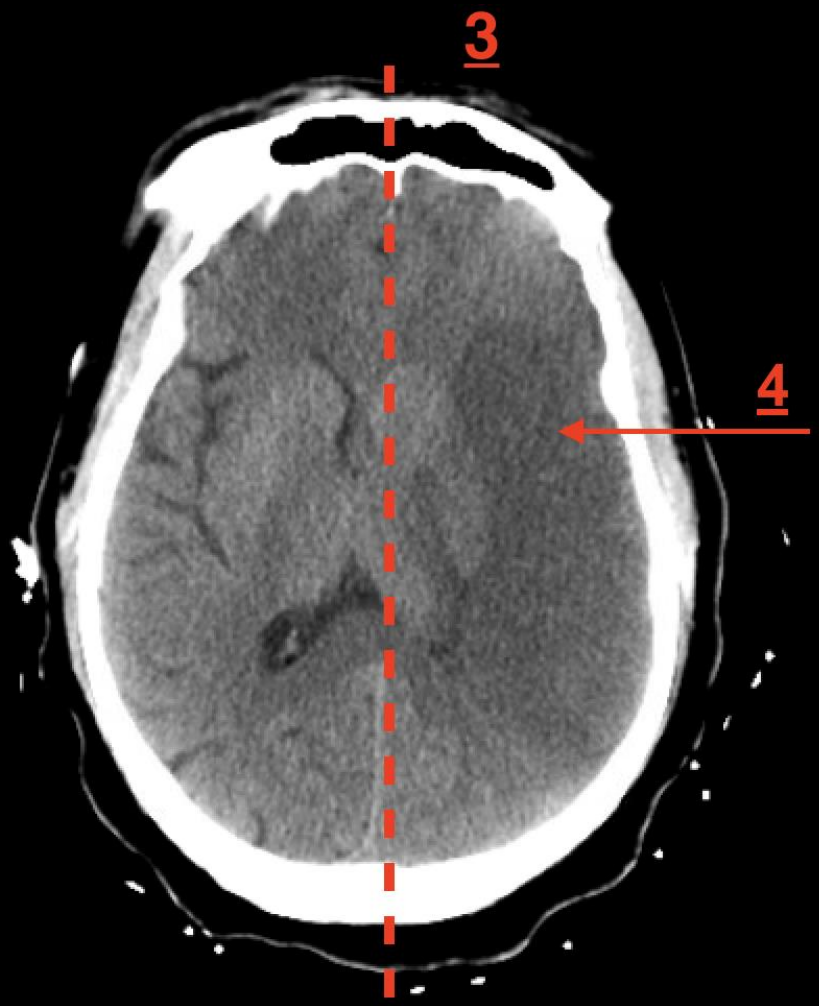
1: Hypodensity:
Region of hypodensity in the territory of the left middle cerebral artery representing post-infarctive cytotoxic edema, ASPECTS 0

Pertinent Negatives:
No intracranial hemorrhage
No skull fracture
No hydrocephalus

Imaging Study Obtained & Discussion of the Images

2: Left MCA sign, further supporting diagnosis of MCA territory infarct

Imaging Study Obtained & Discussion of the Images

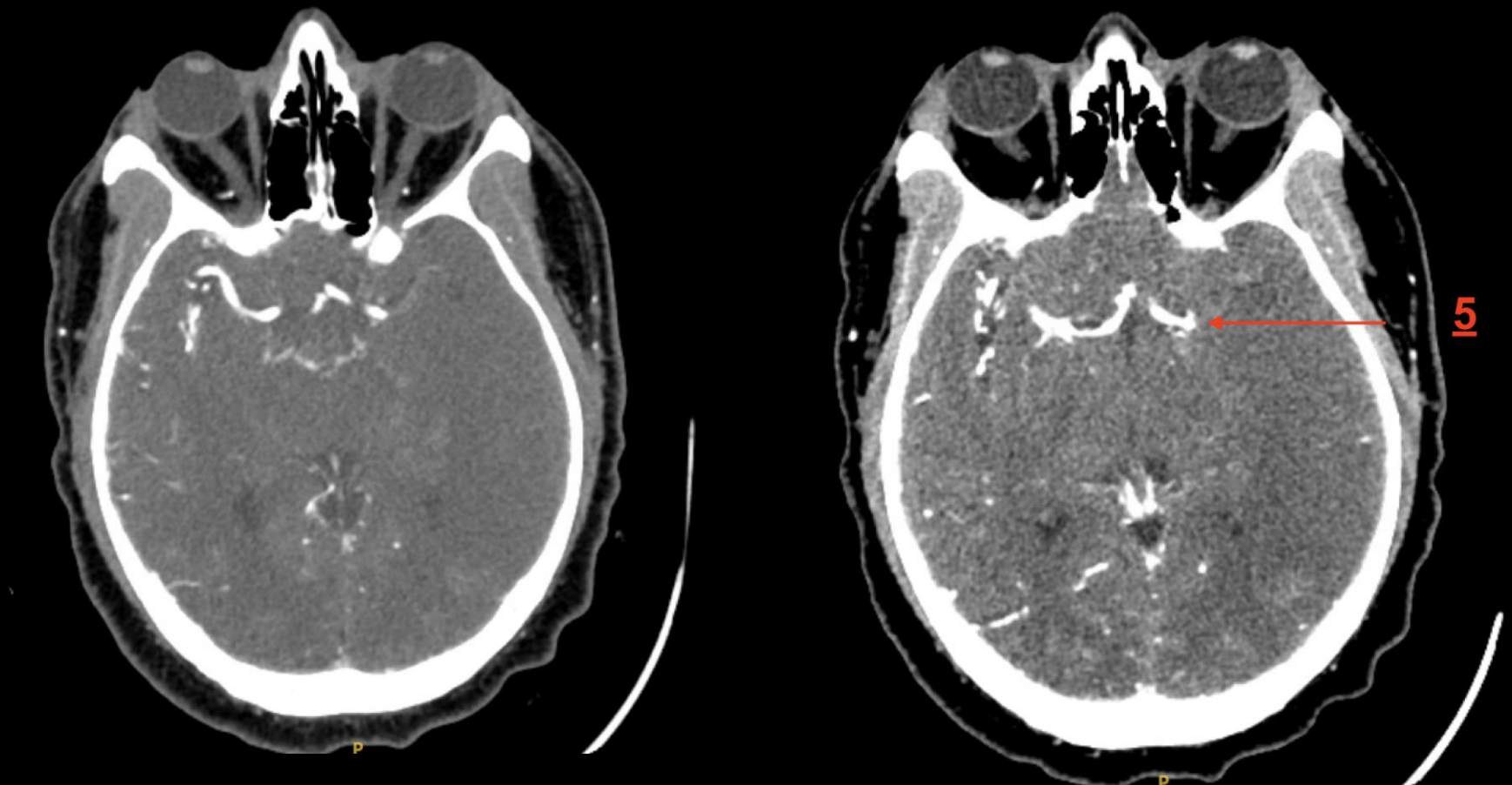


3: Midline shift resulting from mass effect from cytotoxic cerebral edema

4. Left insular ribbon sign- loss of the gray-white interface in the lateral margins of the insular cortex

CT Angiography Head and Neck

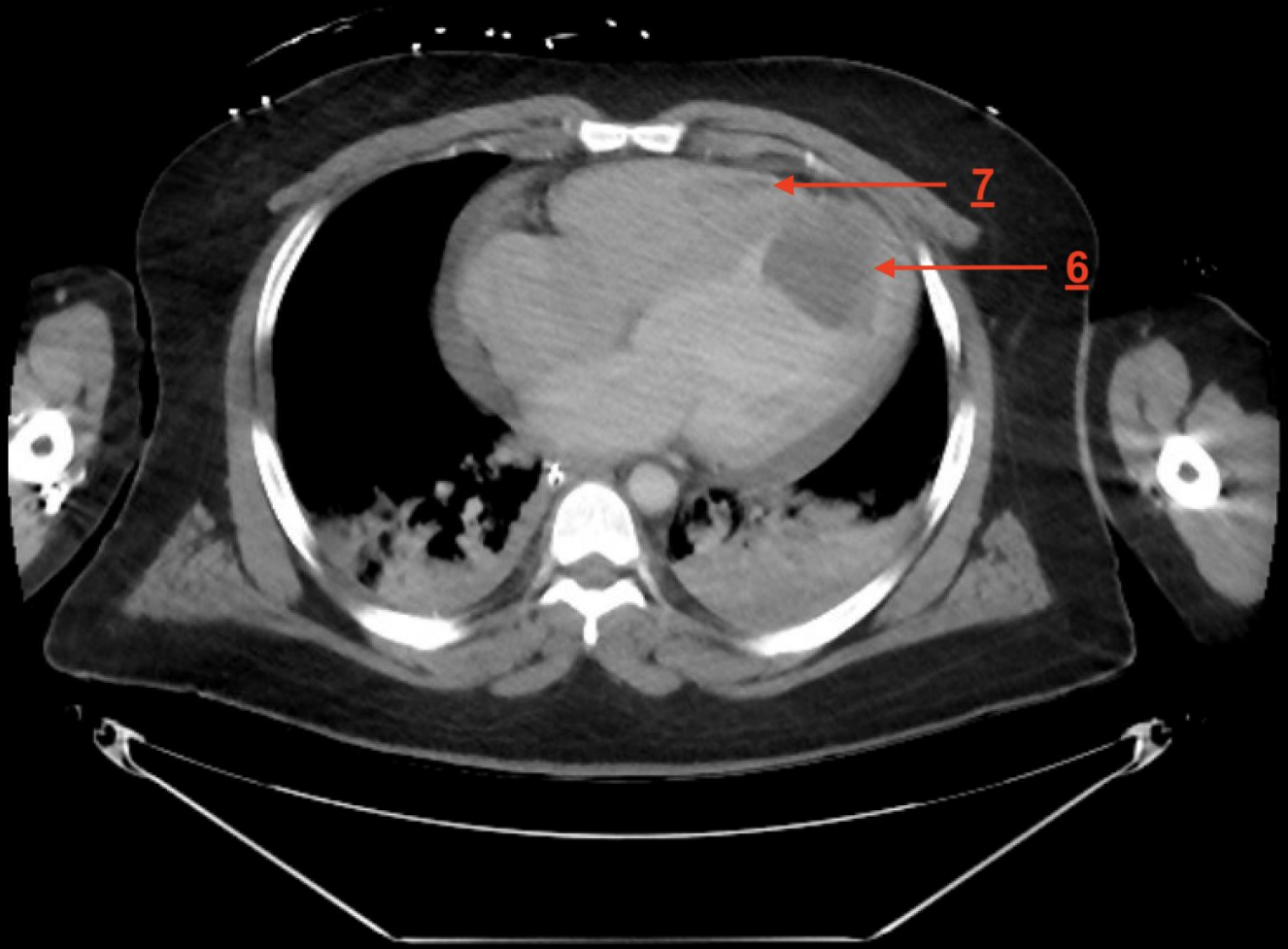
5: Left MCA near complete occlusion from origin throughout, related to acute intravascular thrombus, resulting in large ischemia of vascular territory



CT Angiography Chest

6: A large intracardiac thrombus is present within the apex of the left cardiac ventricle.

7: Smaller intraluminal thrombus within the apex of the right ventricle.



Final Diagnosis

Acute, large left MCA territory infarct

-Has evolved, probably occurred within the past few days given development of mass effect

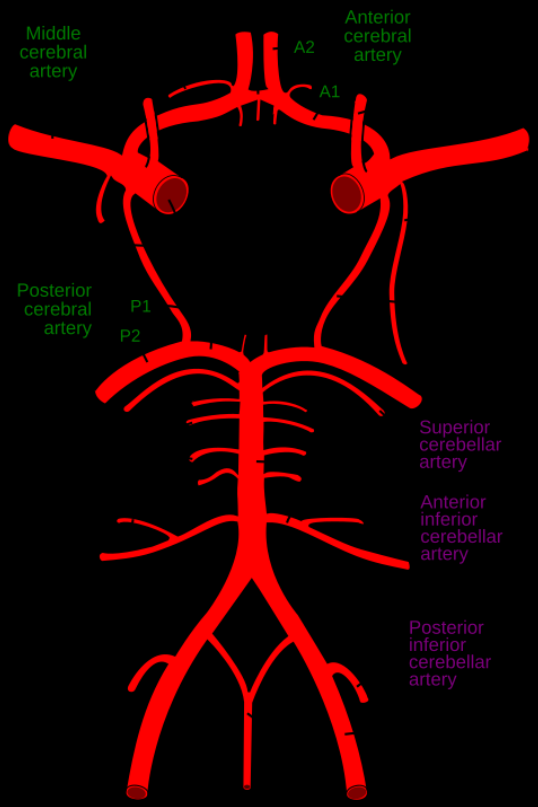
-CT angiography indicates embolism from left ventricular apical thrombus to the left MCA

Differential Diagnosis

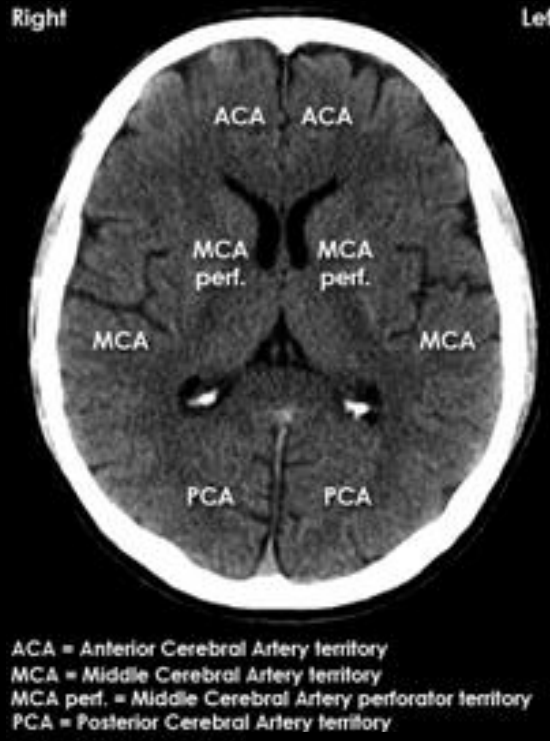
- Stroke Protocol: CT Angiography and MR Angiography are important imaging techniques to narrow differential and obtain accurate diagnosis.
- Hemorrhagic Stroke
  - Intracerebral (e.g., hypertension, vascular from aneurysm or AVM rupture, tumor)
  - Subararachnoid (e.g., vascular from aneurysm or AVM rupture)
  - Subdural from trauma

Cerebral Vasculature

- Circle of Willis

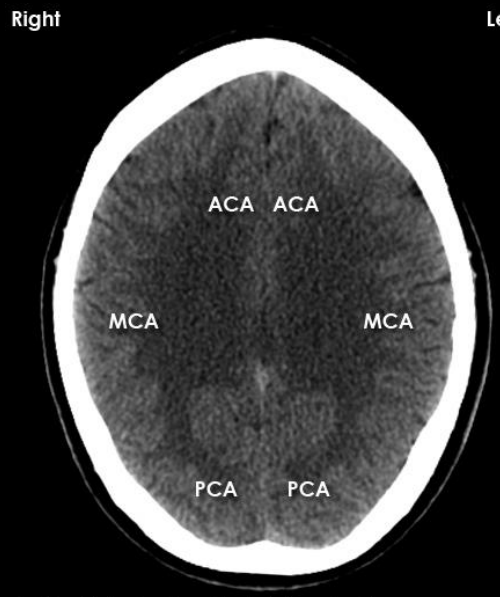


Vascular Territory

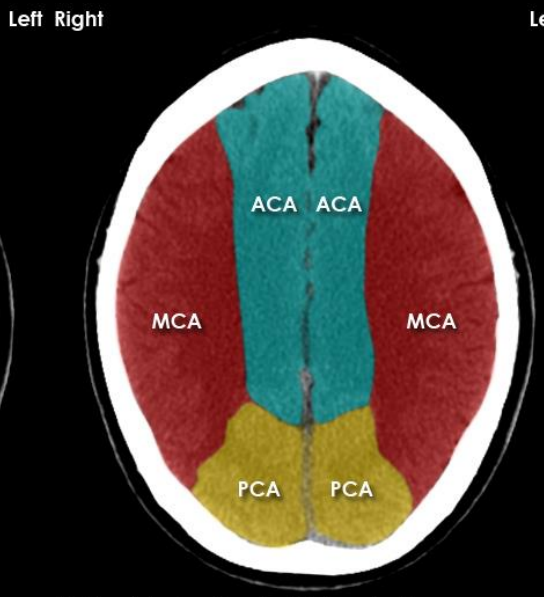


Diagnosis

Major Vascular Territory



ACA = Anterior Cerebral Artery territory
MCA = Middle Cerebral Artery territory
PCA = Posterior Cerebral Artery territory



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Patient

Treatment Guidelines

- Alberta Stroke Program Early CT Score (ASPECTS) - a 10-point noncontrast CT scan score that is useful in the evaluation of patients with acute stroke involving the MCA.
  - ASPECTS for our patient: 0
  - An ASPECTS less than or equal to 7 is predictive of a worse clinical outcome at 3 months and increased risk of hemorrhagic conversion with thrombolysis.
- Manage underlying conditions: e.g., hypercoagulable state suggested by patient's multiple intracardiac thrombi
- Start antiplatelet treatment typically with aspirin or clopidogrel within 24–48 hours after symptom onset.
- Allow permissive hypertension to prevent further ischemia
- Maintain Na >145 to decrease cerebral edema and lower intracranial pressure.

References

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