Ischemic Amnesia Caused by Bilateral Fornix Infarction: A Rare Entity

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A 50-year-old male presented with memory disturbances for the past 10 days in the form of not able to remember things that were told or not able to recollect recent or immediate events such as what he had for the breakfast. He was not a known diabetic, hypertensive, smoking, or alcohol consumption in the past. On examination, he was conscious, obeys commands, and oriented to time, place, and person. His blood pressure was 120/80 mmHg and his heart rate was 80 bpm and regular. Higher mental function examination revealed that recent and immediate memory was impaired. Remote memory was intact. The rest of cognitive and higher mental functions and other neurological examination was unremarkable. Blood investigations showed normal complete hemogram, liver enzymes, proteins, electrolytes, and renal functions. Thyroid functions and serum ammonia were normal. Magnetic resonance imaging brain plain showed T2 hyperintensities, with diffusion restriction noted in both columns of the fornix and no evidence of blooming in SWI images, suggestive of acute infarct in bilateral anterior fornix region. [Figure 1a-d]. Angiogram of cerebral vessels was not done as the patient was not willing. Echocardiogram and carotid vertebral Doppler were normal.

Discussion
Isolated acute amnesia is a rare presentation in routine clinical practice. Common causes noted for acute amnesia are hypoglycemia, syncope, trauma, complex partial seizure, transient epileptic amnesia, Korsakoff’s psychosis, vascular insult, and tumors of the hippocampus and mediobasal region of the thalamus and psychogenic amnesia.[1] Amnesia secondary to vascular cause constitutes about only 1.2% of the total. Common regions involved are genu of the internal capsule, thalamus, mesiotemporal structures, hippocampus, basal forebrain, and retrosplenial cortex. Isolated amnesia is observed if the insult occurred to hippocampus and fornix regions.
Fornix infarction causing acute amnesia is rare. Fornix is a white matter structure and a part of limbic system. It plays a significant role in cognition and memory. Fornix forms efferent tracts from hippocampus connecting to mammillary bodies and from mammillary bodies to anterior nuclei of the thalamus and septal nuclei. It is supplied by perforating branches of anterior communicating artery or subcallosal branches of anterior cerebral artery. Any insult to this region causes isolated anterograde and retrograde memory disturbances. It is also labeled as an amnestic syndrome of subcallosal artery.[3,4] Fornix infarction is rarely caused by vertebral artery dissection.[5] Diffusion tensor tractography, though not done in our patient, is a novel study known to show any insult like edema or infarction or Wallerian degeneration occurring to the white matter tracts and is also helpful in prediction of recovery.[6,7] In this case, bilateral anterior fornix infarction causes acute anterograde amnesia, likely etiological association being cryptogenic in nature in view of the absence of risk factors and normal investigations except for intracranial angiogram of cerebral vessels which was not done in this patient. He was able to recollect the events after 3 months of follow-up, with no specific rehabilitative measures followed. Case reports regarding amnesia secondary to fornix insult due to anterior communicating artery aneurysm coiling have been reported in India so far.[8] This is the first case report depicting amnestic stroke secondary to fornix infarction.

CONCLUSION
Acute amnesia is a feature of fornix infarction. We report this because of its tiny architecture in imaging and rarity in involvement, and pathology involving this area is often missed. Routine lookup of the fornix in regular practice is needed to prevent unnecessary extensive workup for acute amnesia.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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DOI: 10.4103/aiian.AIAN_303_18