

CONCOMITANT ISCHEMIC STROKE AND CONVEXITY SUBARACHNOID HEMORRHAGE: A RARE ASSOCIATION

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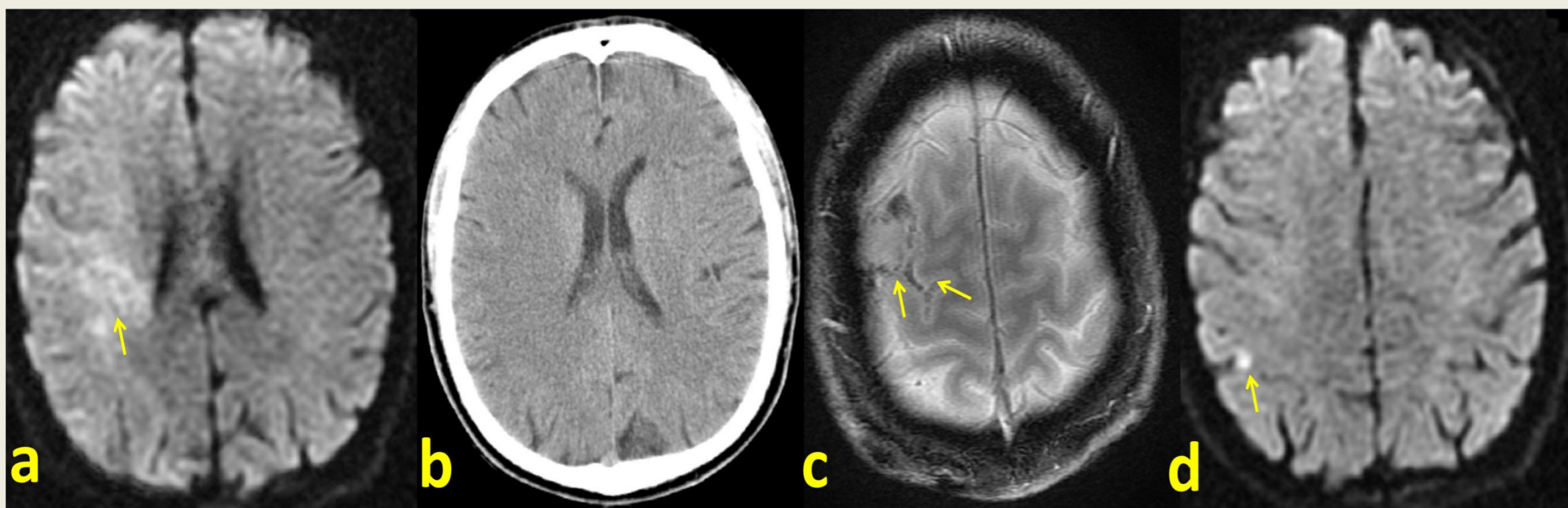
Introduction and objectives

Not traumatic convexity-subarachnoid haemorrhage (c-SAH) is a rare condition with variable causes [1]. c-SAH concomitant to ischemic stroke (IS) is a condition even less frequent which etiology is not well established [2-3]. The aim of our study is to study this rare association.

Methods

We retrospectively evaluated all patients referred to our Stroke Unit, presenting with concomitant not-traumatic c-SAH and ischemic stroke between January and December 2016.

Case 1. a) DWI at admission; b) 1-day CT scan; c-d) 1 week GRE and DWI.

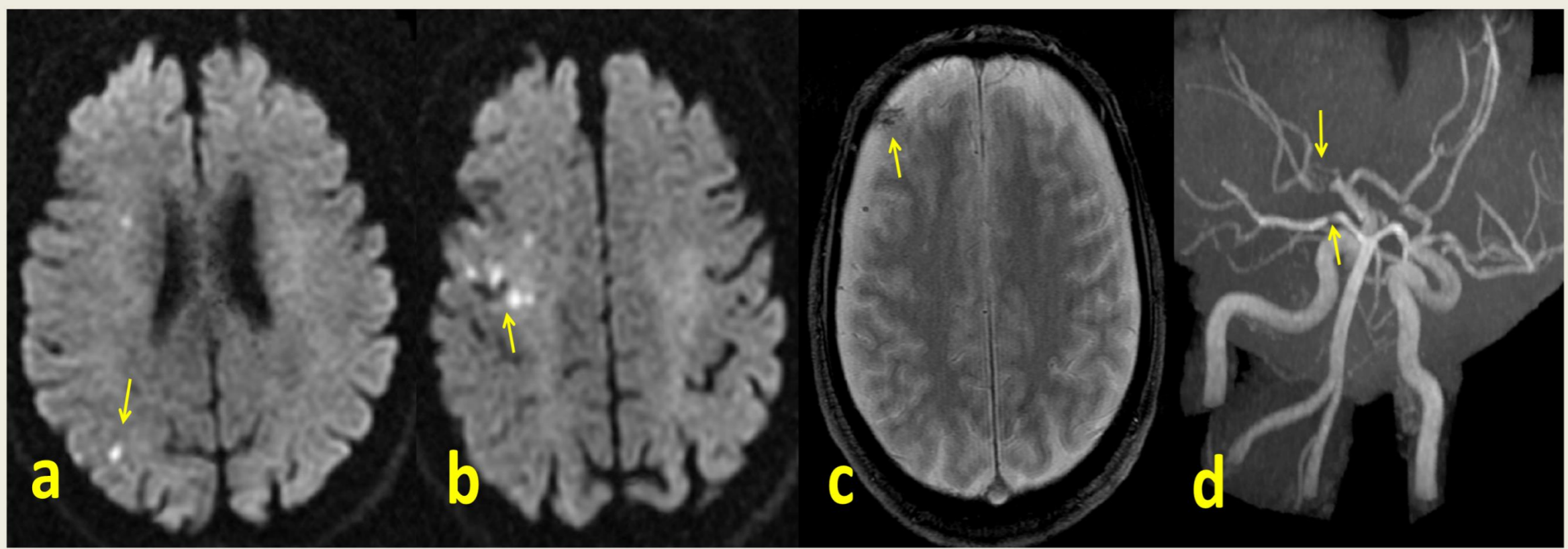


Results (1)

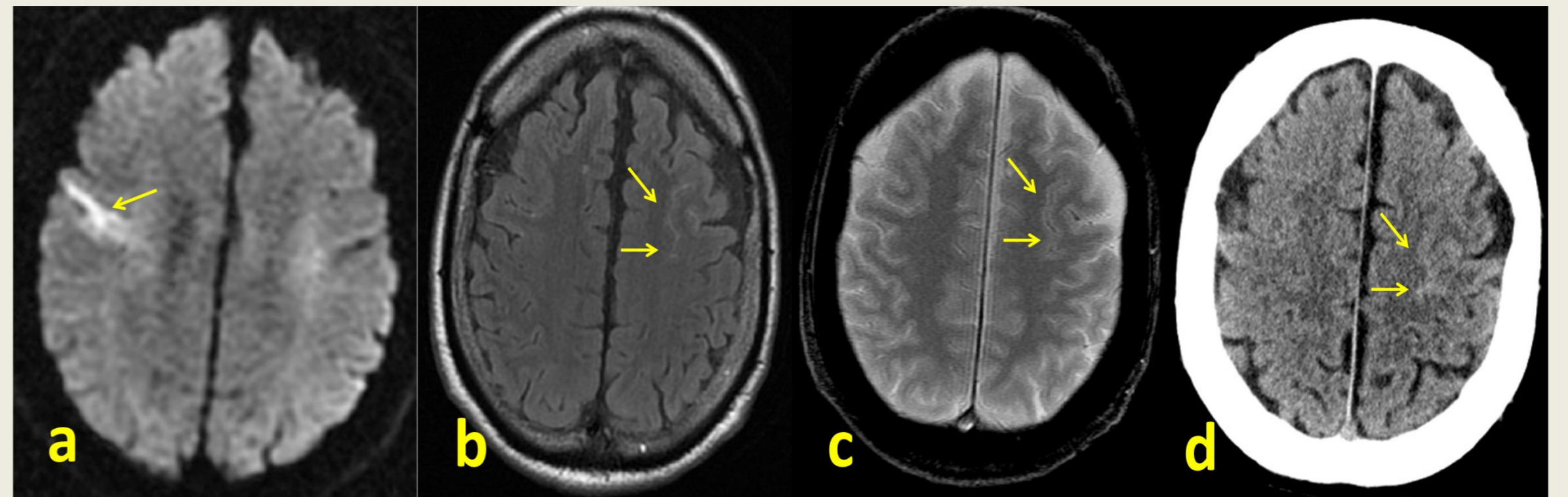
We found four patients (three males; median age 63.25 yo). The first patient had cardioembolic IS, due to patent foramen ovale, treated with intravenous thrombolysis; at one week-MRI scan, c-SAH was detected near a new silent ischemic lesion.

The second patient had multiple acute ischemic lesions and atherosclerotic intracranial stenosis. In both c-SAH was ipsilateral to the ischemic lesion.

Case 2. a-b) DWI at admission; c) GRE at admission d) TOF MRA



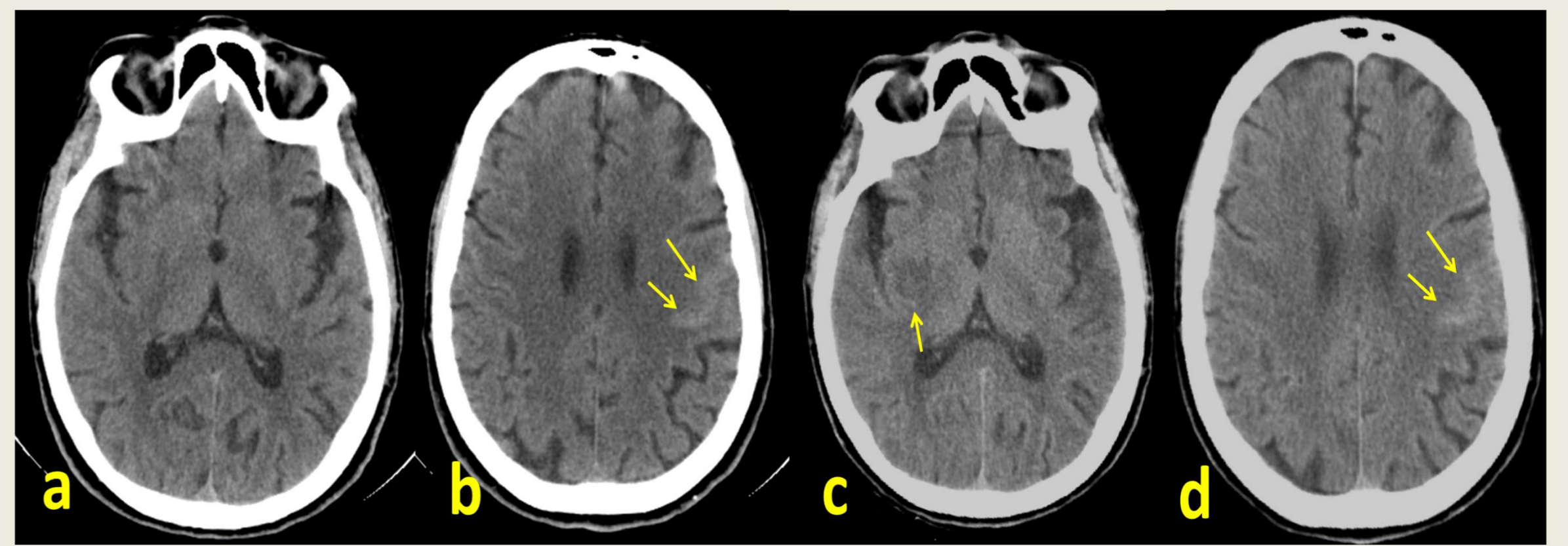
Case 3. a) DWI, b) FLAIR, c) GRE, d) CT scan at admission.



Results (2)

The third patient had stroke, whose embolic etiology was very likely; c-SAH was contralateral to ischemic lesion. In all these patients MRI-T2* did not show microbleeds nor further cortical siderosis, so excluding cerebral amyloid angiopathy (CAA). Besides DSA did not show signs of vasculitis nor reversible cerebral vasoconstriction syndrome (RCVS). In the fourth patient only CT scan was performed showing c-SAH contralateral to ischemic lesion. At admission atrial fibrillation was detected. NAOC was started after two weeks.

Case 4. a-b) CT scan at admission; c-d) 3-day CT scan.



Discussion and conclusions

Our cases suggest that IS could be an underestimated cause of c-SAH and should be included in differential diagnosis of atraumatic c-SAH. Other reports [2-3] identify in CAA and major arteries occlusion the principle causes of c-SAH associated to IS, we differently detected a more relevant role of cardioembolic sources in IS associated to c-SAH. We postulated that cardiac emboli traveled in distal superficial pial arteries, whose spontaneous recanalization determined rupture of vessels. Otherwise in the context of multiple intracranial stenosis, c-SAH could be due to rupture of dilated fragile compensatory pial vessels.

1. Kumar S, Goddeau RP Jr, Selim MH et al. Atraumatic convexal subarachnoid hemorrhage: clinical presentation, imaging patterns, and etiologies. *Neurology*. 2010 Mar 16; 74: 893-899.
2. Nakajima M, Inatomi Y, Yonehara T et al. Nontraumatic convexal subarachnoid hemorrhage concomitant with acute ischemic stroke. *J Stroke Cerebrovasc Dis*. 2014 Jul; 23: 1564-1570.
3. Usmani N, Ahmad FU, Koch S. Convexity subarachnoid hemorrhage in ischemic stroke. *J Neurol Sci*. 2015 Jan 15;348: 259-261.