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Introduction

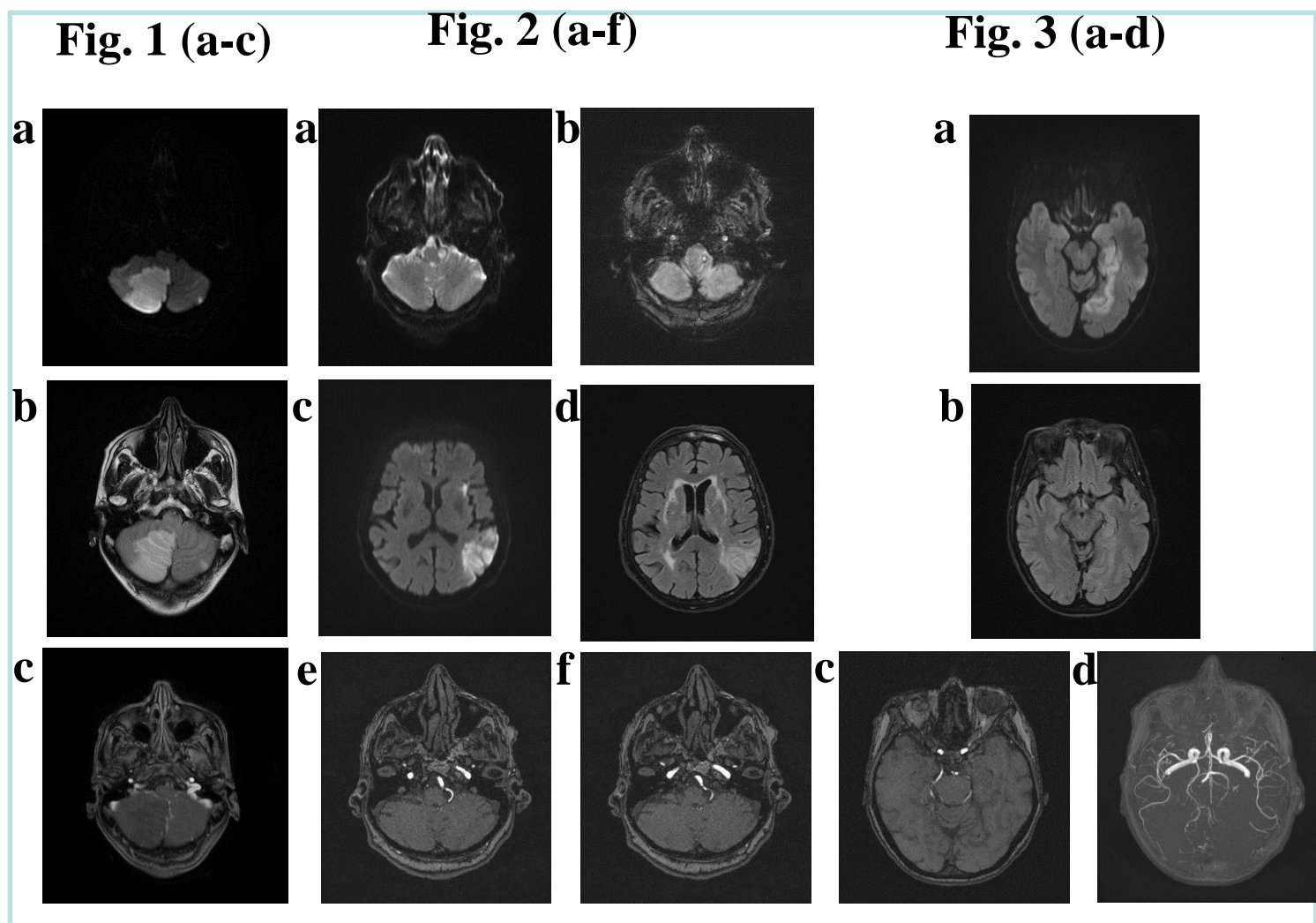
Acute vertebrobasilar cerebrovascular events represent a challenge at the emergency department. Clinical symptoms and signs may be underestimated or attributed to other aetiologies. Misdiagnosis is frequent, because of unavailability of Magnetic Resonance Imaging in peripheral community hospitals. Door to needle time for thrombolysis is often longer, mechanical thrombectomy may be troublesome compared to strokes related to carotid axis (CA) involvement. Outcomes may be severe. Developmental abnormalities of vertebrobasilar system (DAVB) are common. The aim of our study was to assess incidence of vertebrobasilar acute ischaemic stroke (VBAIS) in patients with DAVB.

Materials and Methods

We recruited 71 patients affected with acute cerebrovascular events (age 70,7 sd 14,3 years). They underwent CT at day 0 and angio-TC and/or angio-MRI within one week.

Results

The most common clinical symptom in VB patients was dizziness, followed by loss of consciousness, confusion. At emergency department, language disturbs, ataxia, hemianopsia were present in 20%, 15%, 3% of the patients, respectively. DAVB were detected in 21/71 patients (29,6%), with corresponding, congruous VBAIS in 14/21 ones (66,7%). In 11/14 patients (78,6%), DAVB were present in other tracts and in 5/14 patients (35,7%) hypo/aplasias were also found in segments of intracranial arteries of CA.



DWI, T2 FLAIR and angio-MRI in patients with DAVB.

Fig. 1 (a-c): 51 years old male patient, admitted for dizziness in right vertebral hypoplasia.

Fig. 2 (a-f): 92 years old female patient, admitted for vertigos, ataxia in left basilar dolichoectasia and posterior cerebral artery hypoplasia.

Fig. 3 (a-d): 62 years old female patient, admitted for dysarthria, right hemianopsia, hemiparesis and hypoesthesia in left vertebral hypoplasia, posterior cerebral artery hypoplasias and left posterior communicating artery aplasia.

Among concomitant risk factors, arterial hypertension, hypercholesterolemia, atrial fibrillation, diabetes mellitus, current smoke, alcohol consumption were reported in 71,4%, 57,1%, 28,6%, 28,6%, 28,6%, 7,1% patients, respectively.

Discussion

Our data highlight high incidence of VBAIS in patients with DAVB. The presence of multiple hypo/aplasias may hinder collateral compensation. Apoptotic phenomena may narrow the therapeutic window. Moreover, risk factors may precipitate ischaemic sufferance. Neuroimaging with angio sequences are mandatory for prompt diagnosis. Further studies are needed to assess the risk of VBAIS and decision making on acute treatments, primordial, primary and secondary prevention.

References

Hoyer C. and Szabo K.: Pitfalls in the diagnosis of posterior circulation stroke in the emergency setting. *Frontiers in neurology* 2021;12:682827. doi 10.3389/fneur.2021.682827