Vasculitis, fibromuscular dysplasia or hereditary aneurysms?

Sirs,

Many disorders may mimic the clinical and radiological presentation of vasculitis. Therefore, it is important to recognise them to avoid unnecessary immunosuppressive therapy.

Vasculopathies are an important mimic of large and medium vessel vasculitis and include hereditary and non-hereditary forms (1). Clinical presentation, laboratory studies, imaging, and biopsy usually permit differentiation between vasculitis and their mimics, however in some cases the differential diagnosis can be difficult and vasculitis and mimic can coexist in the same patient.

We describe a case in which vascular lesions of different aetiologies coexisted in the same patient making the diagnosis challenging.

A 52-year-old woman was referred to our Department for suspected vasculitis. Her mother had a thoracic aneurysm. Kikuchi's disease was suspected at the age of 28 because of fever lasting more than one week and cervical lymphadenopathy. Then, 15 years later she had a myocardial infarction and multiple aneurysms of coronary arteries were found at coronarography (Fig. 1A). A previously undiagnosed incomplete form of Kawasaki disease was suspected. One year later, she developed abdominal pain and abdominal angiography showed small aneurysms of the left and right renal arteries with kidney infarcts, an aneurysm of the hepatic artery (Fig. 1B), and multiple aneurysms and stenoses of the jejunal arteries (Fig. 1C). Polyarteritis nodosa was suspected and glucocorticoid treatment prescribed but never started by the patient.

At the admission, she was asymptomatic. Acute-phase reactants and 18F-FDG PET/CT were negative. Chest and brain MR-angiography showed multiple aneurysms and stenoses of the vertebral arteries (Fig. 1D) and the absence of wall thickening/oedema in all vascular districts. Since her mother had a thoracic aneurysm, we performed genetic testing to exclude syndromic or familial forms of aneurysmal disease. No FBN1, COLA3A1, TGFB2, SMAD3, TGFBR1 and TGFBR2 mutations were detected, however, a non-sense mutation in MYH11 (16p13.11) was found. Aneurysms/dilations in the thoracic aorta were not found at the image review.

Considering the multifocal aneurysms, stenoses, string-of-beads appearance of medium-sized arteries, and the absence of inflammatory lesions at imaging, multifocal fibromuscular dysplasia (FMD) was diagnosed. Because aneurysms/stenoses in coronary arteries are unusual in FMD, MYH11 mutation or Kawasaki disease were considered likely to cause these lesions.

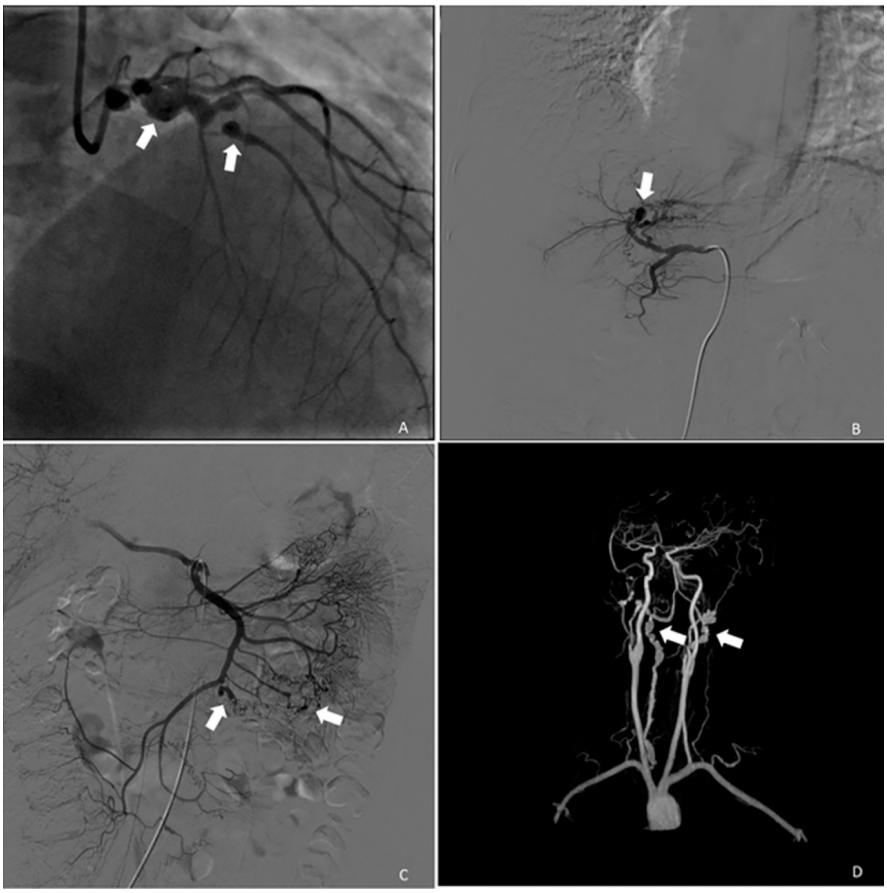

Fig. 1. Angiographic findings in the described case. (**A**) Coronarography showing multiple aneurysms of the coronary arteries (arrows). (**B**) and (**C**) Aneurysm of the hepatic artery (arrow in B) and multiple aneurysms and stenosis of the jejunal arteries (arrows in C) at abdominal angiography. (**D**) String-of-beads appearance of the vertebral arteries (arrows) at MR-angiography.

This case highlights that vascular lesions of different aetiologies can coexist in the same patient making the diagnosis challenging (Table I). Our patient satisfied the criteria established in 2019 to diagnose multifocal FMD with multivessel involvement (1). However, aneurysms/stenoses does not usually occur in coronary arteries in FMD; in this condition potential manifestations include spontaneous coronary artery dissection, distal tapering or long, smooth narrowing that may represent dissection, intramural haematoma, spasm, or tortuosity (2). Therefore, the coronary aneurysms, observed in our patients, could not be caused by FMD. Although rare, adult Kawasaki disease may be a potential cause of coronary artery aneurysms (3). In our patient, the diagnosis of incomplete adult Kawasaki disease was made retrospectively in the presence of myocardial infarction due to coronary aneurysms and based on a medical history evocative of this condition in its incomplete form. Familiarity for thoracic aneurysm led us to require genetic testing. A MYH11 mutation was found, these mutations, which encode smooth muscle cell isoform of the myosin heavy chain 11, are responsible for thoracic aorta aneurysms/dissections, either in association with patent ductus arteriosus or with coronary artery aneurysms, with an autosomal dominant inheritance (4, 5). We cannot exclude in our patient a possible contribution of this mutation in determining coronary artery aneurysms. Precise and individualised diagnosis and therapy are often limited in complex cases, as in our patient, by the coexistence of different conditions and by the scarce current knowledge of disease aetiologies.

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Table I. Possible differential diagnosis of the vascular images described in the text.

	Clinical aspects	Imaging	Laboratory
Large-vessel vasculitis (TAK, GCA) (6)	Fever, anorexia, weight loss, pain over the affected arteries, cranial manifestations, polymyalgia rheumatica, vascular bruits, decreased or absent pulses.	Concentric wall thickening/oedema/ contrast enhancement of the vessel walls, stenosis and/or aneurysm of the aorta and its branches at the origin or proximal arterial segment.	Increased acute phase reactants (ESR and CRP), anaemia, thrombocytosis
Polyarteritis nodosa (6)	Systemic manifestations, abdominal pain (often associated with or exacerbated by meals), myalgia/arthralgia, hypertension, multiple mononeuritis/polyneuropathy, livedo reticularis/ cutaneous nodules/purpura/ulcers.	Multiple microaneurysms (1-5 mm), stenosis, and occlusion, mainly in coeliac, hepatic, renal, and mesenteric arteries, infarcts.	Increased acute phase reactants, sometimes HBV/HCV infection
Kawasaki Disease (3, 6)	Bilateral bulbar conjunctival injection without exudates; erythema and cracking of lips, strawberry tongue, or erythema of the oral and pharyngeal mucosa; cervical lymphadenopathy; polymorphic rash; erythema and oedema of the hands and feet in the acute phase and/or periungual desquamation in the subacute phase. Complete: fever lasting at least 5 days, with at least 4 clinical criteria. Incomplete: fever lasting at least 5 days, with at least 2 clinical criteria and laboratory findings of severe inflammation.	Coronary artery aneurysms and in 2% of the patients aneurysms in the axillary, subclavian, brachial, iliac, and/or renal arteries.	Increased acute phase reactants (ESR and CRP)
Fibromuscular dysplasia (1)	Hypertension, headache, strokes. Ischaemic symptoms (mainly neurological and renal involvement), vascular bruits.	Multifocal lesions: alternating zones of stenoses and aneurysms (string of beads). Focal lesions: short (<1 cm) solitary stenosis. Tubular lesions: elongated, smooth, concentric narrowing of the vessel.	Negative

ESR: erythrocyte sedimentation rate; CRP: C-reactive protein.

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