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Review article

Pictorial essay: Uncommon causes of coronary artery encasement

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ABSTRACT

This pictorial essay presents cases of non-atherosclerotic coronary artery encasement which were encountered in our institution, including malignant lymphoma, Erdheim-Chester disease, immunoglobulin G4 (IgG4)-related disease and Polyarteritis Nodosa. These conditions usually have multisystemic involvement which aid in the diagnosis. Awareness of these uncommon disorders and their ancillary findings can facilitate early, accurate diagnosis and appropriate management.

1. Introduction

Multidetector CT (MDCT) of the chest and coronary arteries is widely used in the investigation of chest pain and dyspnea. Non-atherosclerotic coronary artery encasement is an uncommon finding. We present the imaging findings of various cases of coronary artery encasement detected by MDCT, as well as their systemic involvement where appropriate.

2. Coronary artery vasculitis

There are multiple causes of coronary artery vasculitis that can lead to encasement of the vessels. Most commonly, Kawasaki's disease in children and polyarteritis nodosa in adults, both of which are manifestations of vasculitis in medium-sized vessels, affect the coronary arteries,[1] but large- and small-vessel vasculitis such as giant cell arteritis, Takayasu arteritis, Henoch Schonlein purpura, Wegener's granulomatosis, systemic lupus erythematosis and rheumatoid arthritis are also known causes of coronary artery vasculitis.[2]

Coronary artery involvement may be accompanied by various non-specific systemic manifestations, including fever, night sweats, malaise, weight loss, arthralgia and myalgia. Patients with localised forms of vasculitis may be asymptomatic.

Complications such as thinning and aneurysmal dilatation may result in rupture and haemorrhage and thrombosis or stenosis may result in myocardial infarction.[3] The individual features of all mentioned pathologies are beyond the scope of this article, but we further describe polyarteritis nodosa with a case example.

2.1. Polyarteritis nodosa

Polyarteritis nodosa is a systemic necrotizing vasculitis that affects medium and small vessels. Multiple organs are usually involved. The heart is less commonly affected than the kidneys, gastrointestinal tract, peripheral nerves, skin and skeletal muscles. It usually occurs in the 5th to 7th decade of life and is more common in male than in female patients.

Clinical presentations of coronary arteritis may include hypertension, tachycardia, dyspnea and congestive heart failure (57%).[4]

In a post mortem review of 62 patients with polyarteritis nodosa, coronary involvement was demonstrated in 62% of cases.[4] Arteritis in polyarteritis nodosa may result in aneurysmal dilatation/ectasia and occlusion by thrombus (Fig. 1) leading to

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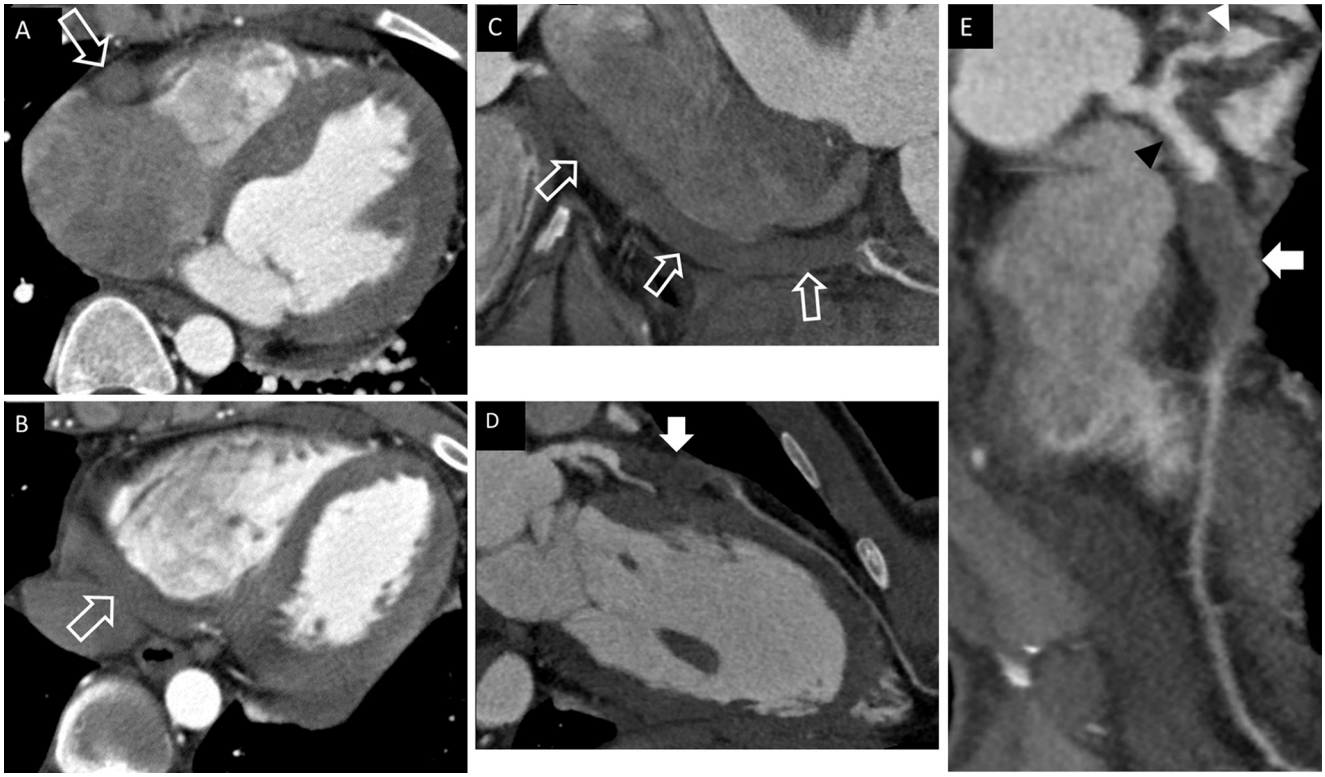

Fig. 1. 22 year old Chinese man with fever, pharyngitis, arthralgia, and enlarged palpable cervical lymph nodes. A diagnosis of polyarteritis nodosa was made based on the clinical and radiological findings. (A, B, C) The right coronary artery shows extensive encasement with thrombosis (open arrows). He subsequently developed an inferior septal infarct. (D, E) Curved multiplanar reformations from CT coronary angiogram demonstrates ectasia of the left anterior descending, ramus intermedius, proximal left circumflex arteries. Soft tissue encasement and thrombosis of the proximal and mid left anterior descending artery is seen (solid arrows).

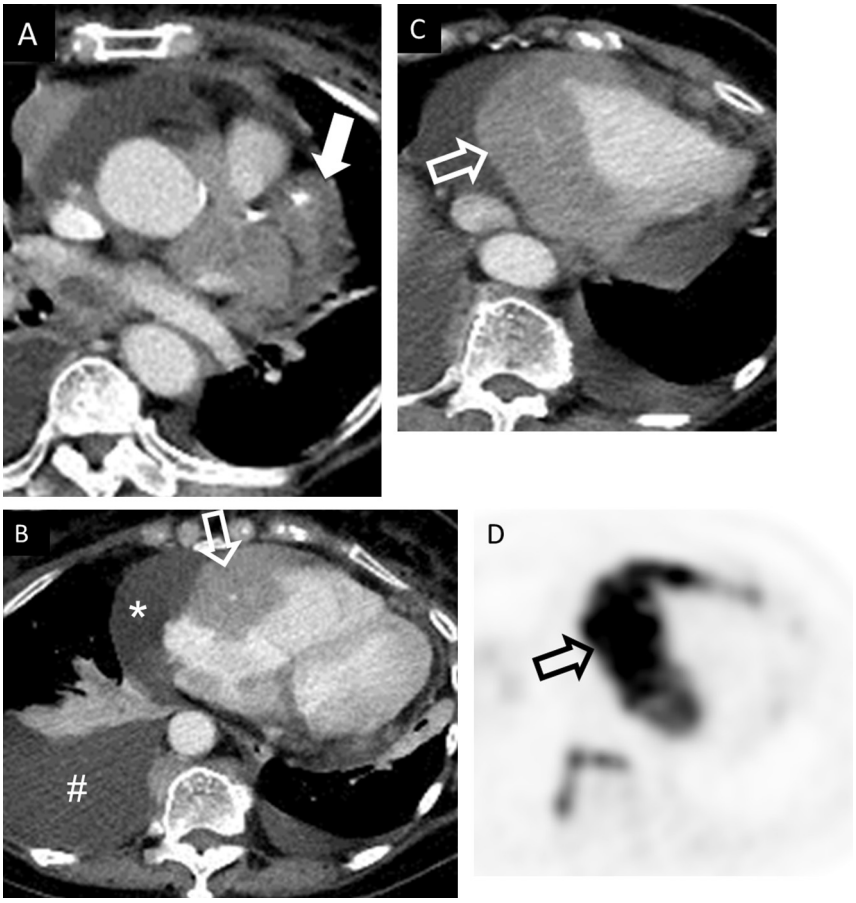

Fig. 2. 78 year old lady with chest pain and shortness of breath. Biopsy of mediastinal lymph nodes showed diffuse large B-cell lymphoma, and she responded well with chemotherapy. (A, B, C) Periarterial soft tissue infiltration encasing but not occluding the left (solid arrows) and right (open arrows) coronary arteries. Pleural effusion (#) and pericardiac effusion (*) were also present. (D) The soft tissue around the right coronary artery demonstrated intense F-18 Fluorodeoxyglucose uptake (open arrow).