CASE REPORT

Takayasu Arteritis in an Adolescent Girl With Celiac Disease

EKTA AGARWAL[1,3], NATASHA GUPTA[2] AND DHEERAJ SHAH[1]

Department of [1]Pediatrics and [2]Radiology, University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi 110095, India, and [3]Sambhav Pediatric Neurology, Development & Intervention Centre, Jamshedpur, Jharkhand, India.

Correspondence to Dr Dheeraj Shah, Director-Professor, Department of Pediatrics, University College of Medical Sciences & GTB Hospital, Delhi, India. dshah@ucms.ac.in

ABSTRACT

Takayasu arteritis and celiac disease are immune-mediated diseases. An association between the two conditions has been observed in a few cases. Herein, we present a 12-year-old girl who was diagnosed with celiac disease and one year later detected to also have Takayasu arteritis. Special attention should be given to this possible association as both conditions may have similar abdominal symptoms. Early diagnosis is pertinent as it has therapeutic implications.

Keywords: Autoimmune, Abdominal pain, Vasculitis

INTRODUCTION

Takayasu arteritis (TA) is a chronic granulomatous disease of unknown origin involving the aorta and its major branches. The disease manifestations reflect the extent of involvement of the vessels during the active and chronic phase of the disease. Takayasu arteritis can be associated with other autoimmune diseases.[1] Celiac disease (CD), an autoimmune disorder, occurs due to intake of gluten in genetically predisposed individuals, and primarily affects the small intestine. There are very few reported cases of association of TA with CD, especially in children.

CASE DESCRIPTION

A 12-year-old girl presented with complaints of fever, on and off, for the preceeding 3-4 months, headache, bodyache and blurring of vision of one week duration, and multiple episodes of generalized seizures on the day of presentation. In the initial part of her febrile illness, she was hospitalized elsewhere and was detected to have anemia and hepatosplenomegaly; she was managed as enteric fever and discharged. Her past history and records revealed that she was diagnosed as CD one year ago when she had symptoms of chronic diarrhea, abdominal distension, growth failure and anemia. Serum tissue transglutaminase (tTG) IgA antibody levels were elevated (>20 U/ml) and the upper gastrointestinal (GI) endoscopy and biopsy findings were consistent with CD. She was prescribed gluten-free diet (GFD) and hematinics with which her gastrointestinal symptoms resolved. She reported compliance with GFD but the improvement in her hemoglobin and growth parameters was unsatisfactory. She did not have any family history suggestive of tuberculosis or other chronic illness.

On examination during the present hospitalization, she had pallor, mild hypertension (BP 118/81 mm Hg, >95th percentile as per age and height) and hepatosplenomegaly (liver 3 cm, spleen 5 cm palpable below costal margin). She had short stature (height-for-age < -3 standard deviation, SD) with pre-pupertal secondary sexual characteristics. All peri-pheral pulses were well felt. Neurological examination revealed increased tone with brisk deep tendon reflexes and bilateral extensor plantar response; there was no neck rigidity or focal neurological deficit. Laboratory findings were: hemoglobin 8.1 g/dL, total leucocyte count 10,000/mm^3, platelet count 90×10^9/l, normocytic normochromic red blood cells on peripheral smear, unremarkable liver and kidney function tests and blood sugar. Chest radiograph showed a prominent aortic knuckle causing mediastinal widening (***Fig.* 1**), and lumbar puncture was traumatic. She was managed with intravenous antibiotics, phenytoin and mannitol, pending further work-up with differential diagnoses of disseminated tuberculosis with CNS involvement and lymphoreticular malignancy. Her Mantoux test was 12 mm after 48 hours. MRI of brain showed non-specific multifocal hyperintensities. Child was started on empirical antitubercular treatment (ATT). On day 4 of hospitalization, she developed features of congestive heart failure, and was noticed to have high blood pressure (136/87 mm Hg) with prominent supra-sternal and right supraclavicular arterial pulsations with ill-

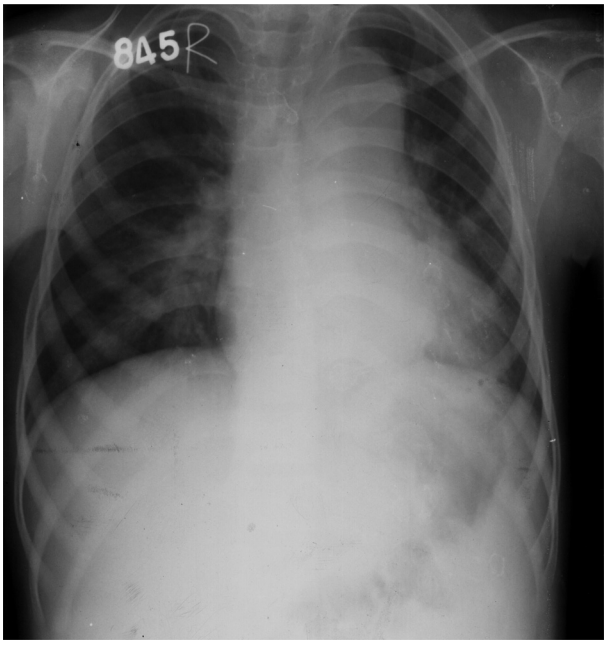

FIG. 1 Chest radiograph in a 12-year-old girl showing prominent aortic knuckle causing mediastinal widening.

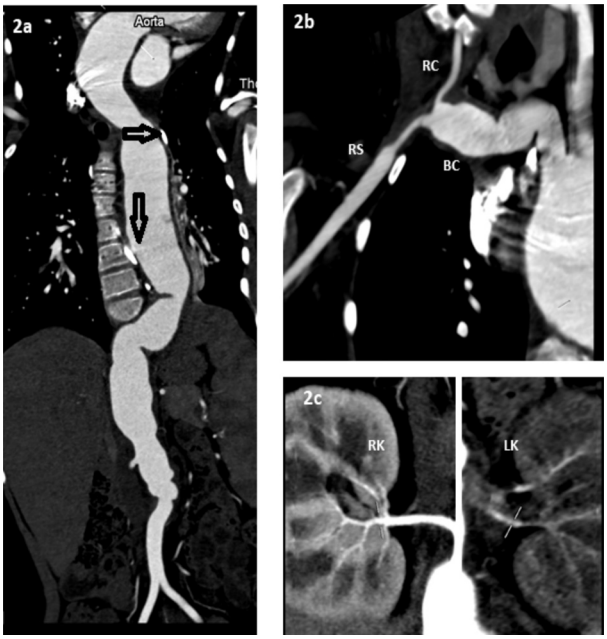

FIG. 2 Computed tomographic angiography (curved multiplanar reconstructions) demonstrating (a) dilated, tortuous aorta with areas of stenosis, irregularity of wall and calcific foci (arrows) along wall; (b) dilated and tortuous brachiocephalic artery (BC) with narrowed proximal segments in right subclavian (RS) and right common carotid (RC) arteries, and (c) attenuated left renal artery.

defined ovoid mass with bruit auscultated over suprasternal area and the mass. Injection furosemide followed by oral metoprolol were added to control hypertension and congestive heart failure. Ultrasonography with doppler of the mass showed dilated ascending aorta and brachiocephalic artery, circumferential mural thickening and irregularity, luminal stenosis with proximal dilatation of subclavian artery, and homogeneous moderately echogenic circumferential mural thickening in left common carotid artery (CCA). A diagnosis of aortoarteritis was suspected. Echocardiography confirmed dilatation of aorta and revealed global hypokinesia with left ventricular ejection fraction of 55% and mild pericardial effusion. Computed tomographic angiography showed dilated and tortuous aorta with areas of stenosis, irregularity of wall and small calcific foci along wall (***Fig*. 2a**); dilated and tortuous brachiocephalic artery with narrowing of proximal portions of right subclavian artery and common carotid artery (***Fig*. 2b**); luminal stenosis of left pulmonary artery; narrowed superior mesenteric artery (SMA) with wall thickening; attenuated left renal artery (***Fig*. 2c**); and mild narrowing at origin of celiac trunk. Child was diagnosed as Takayasu arteritis type V P+ (acute and chronic changes) according to Pediatric Rheumatology European Society and European League Against Rheumatism (EULAR) proposed consensus criteria.[2] She was further worked up for secondary associations of TA and end organ involvement. ESR was elevated (45 mm/hr), CRP was 4.8 mg/dL, serum anti-neutrophil antibody was negative, and serum angiotensin-converting enzyme level was within normal range. Fundus examination showed no retinopathy.

Oral prednisolone (2 mg/kg/day) and aspirin were added on day 6 of admission in view of findings suggestive of TA. ATT was continued in view of positive Mantoux test and well known association of TA with tuberculosis. After 72 hours of treatment the child showed clinical improvement with resolution of tachycardia, tachypnea and regression of hepatomegaly. She was discharged on ATT, oral antihypertensive drugs and tapering doses of oral steroids. On follow-up in the outpatient clinic, she continued to have raised blood pressure for which she was advised to consult an interventional cardiologist. She was advised to undergo renal angioplasty with stent placement for persistent renovascular hypertension but she could not get it done due to various personal and logistic issues. She had an erratic follow-up in the outpatient clinic over the next few months and was subsequently lost to follow-up.

DISCUSSION

The patient described above had a severe form of TA in association with underlying CD for which she was already on GFD. Patients with CD are known to have higher

chances of other autoimmune diseases such as Type I diabetes mellitus, multiple sclerosis (MS), dermatitis herpetiformis, and autoimmune thyroiditis. TA is also known to be associated with autoimmune diseases such as systemic lupus erythematosus, juvenile idiopathic arthritis, sarcoidosis and inflammatory bowel disease.

The association of CD and TA has been reported only rarely. Some shared cytokines may play a role in co-occurence of these diseases. Almost all the reports of this association are in young to middle aged women.[3-5] On extensive literature search, we could find only one previous report of this association in pediatric or adolescent age group wherein a 12-year-old girl who presented with pallor, short stature and diarrhea and was found to be having poorly palpable pulses on clinical examination.[6] This patient also had a history of fever of unknown origin and headache for many years before both these diseases were diagnosed. In our case, though the diagnosis of CD preceded the diagnosis of TA, it is difficult to conclude which of the two developed earlier. Our patient had severe short stature as well as extensive involvement of vasculature suggesting that both the diseases had been ongoing for a long duration. In most of the previous reports of this association, the diagnosis of TA preceded the diagnosis of CD. The absence of findings of pulselessness probably contributed to the delayed diagnosis of TA in our case. Presence of tortuous and dilated arteries in this child contributed later to the pulsations in the neck and even a pulsatile mass; thus, the disease presentation was 'pulsatile' rather than a 'pulseless' disease.

The involvement of mesenteric arteries in TA can also cause abdominal symptoms akin to those seen in CD. The tTG positivity, compatible biopsy changes and response to GFD confirmed the presence of CD in our case. However, continuing pallor, fatiguability and appearance of prolonged fever suggested another additional diagnosis which later turned out to be extensive TA.

We conclude that in patients with CD, autoimmune disorders like TA may be suspected if there is unexplained fever or/and inadequate response to GFD despite compliance. Likewise, in patients with TA, symptoms of diarrhea and abdominal distension may suggest CD and warrant further investigations. As each of these diseases involve a different management strategy, timely recognition of association is required improve the outcome.

Contributors: All authors were involved in the diagnosis and clinical management of the child. EA drafted the manuscript which was revised by DS with critical inputs from NG. All authors approved the final version of the manuscript.

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