Cardiol Young 2005; 15: 322–323

ISSN 1047-9511

Brief Report

Idiopathic aneurysm of the inferior caval vein

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Abstract Idiopathic aneurysms of the inferior caval vein are uncommon in children and adults. We describe a 14 year old boy with a saccular aneurysm of the inferior caval vein, in whom no surgical intervention was required to repair the aneurysm. The patient is being followed-up periodically for the evaluation of any increase in the diameter of the inferior caval vein.

Keywords: Venous aneurysm; hepatitis-A; congenital heart disease

Although aneurysms of the inferior caval vein are extremely rare, they are easily diagnosed by techniques such as ultrasonography, computed tomographic scanning, or magnetic resonance imaging. Aneurysms of the inferior caval vein may be complicated with thromboembolism, or so-called inferior caval venous syndrome, but they may also remain silent. While cases discovered incidentally, with no complications, can be followed up over the long term without any surgical intervention, patients who have suffered thromboembolic complications may need surgical management.

Case report

A 14-year-old boy was admitted to Paediatric Emergency Department with complaints including abdominal pain, feeling sick, and fatigue. On admission, the physical examination was normal. Initial laboratory studies revealed normal values, except elevated levels for the hepatic enzymes and bilirubin. Ultrasonography revealed an aneurysmal dilation of the inferior caval vein, with dimensions of 79 by 47 millimetres. Abdominal computed tomographic angiography confirmed the presence of a saccular aneurysmal dilation involving both renal veins that extended from 6 centimetres distal to the origin of the hepatic veins to the infrarenal region of the inferior caval vein. Measurements of the tomographic scan gave dimensions of 100 by 56 by 63 millimeters (Fig. 1).

Following hospitalisation, the levels of bilirubin and the hepatic enzymes increased progressively. The only positive marker for hepatitis was Anti-Hepatitis-A-Virus-Immune-globulin-M, while Hepatitis-B-surface-antigen, Anti-Hepatitis-B-surface-antigen, Anti-Hepatitis-B-core-Immune-globuline-M, and Anti-Hepatitis-C-virus were all negative. Further laboratory tests, including Anti-Cytomegalovirus-Immune-globuline-M, Anti-Human-immune-deficiency-virus, Venereal Disease Research Laboratory Slide Test, Epstein-Barr Virus Viral Capsid Antigen-Immune-globuline-M, Anti-smooth-muscle-antibody, Antinuclear antibody and soluble liver antigen, were also negative. Levels of Alpha-1 antitripsin and

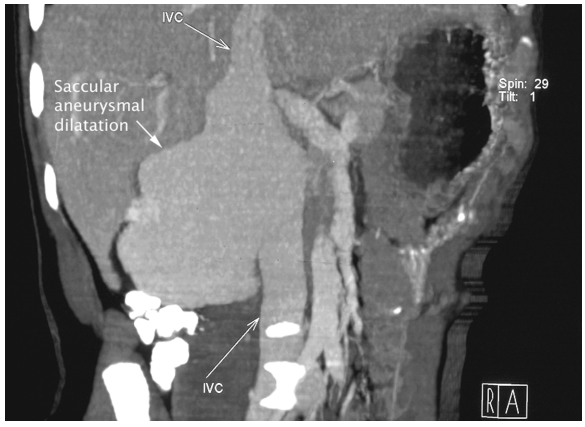

Figure 1.
Abdominal computed tomographic angiography revealed a saccular aneurysmal dilation of the inferior caval vein.

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Accepted for publication 14 January 2005

Alpha-fetoprotein were elevated. The patient was diagnosed with acute hepatitis-A viral infection, and supportive medical treatment was commenced.

Following the 5th day of administration, the hepatic enzymes and levels of bilirubin decreased progressively, and his symptoms diminished dramatically. By the 18th day of hospitalisation, the patient was free of symptoms. He was re-evaluated with computed tomographic angiography, and no difference was found in the size of the aneurysm. We elected to follow-up the patient periodically, without any surgical intervention.

Discussion

An aneurysm of the inferior caval vein may present with symptoms related to complications, such as thromboembolism or the inferior caval venous syndrome. Although these symptoms are obvious, those with uncomplicated aneurysms may have no symptoms. Incidental discoveries are usually made when modalities such as ultrasonography, computed tomography, or magnetic resonance imaging are used in the investigation of other diseases. In addition to these modalities, the aneurysms of can also be revealed by conventional phlebography and images of the venous phase of standard arteriograms. Our patient had an uncomplicated aneurysm of the inferior caval vein, and was free of symptoms. It was the symptoms and laboratory findings consistent with hepatitis that directed us to make an initial evaluation with ultrasonography. This was then verified by computed tomographic angiography, which permitted accurate assessment of the saccular nature of the aneurysm and its dimensions.

Although the etiology of these congenital aneurysms is unclear, some authors have suggested a congenital weakness of the wall of inferior caval vein, while others proposed long-standing hypertension due to outflow obstruction as a cause.[1] Embryologic malformations may also cause such aneurysmal dilation. When evaluated pathologically, true venous aneurysms will be found to involve all three layers of the normal venous wall. In our case, it was not possible to evaluate the histological nature of the aneurysm. But, in the absence of any other secondary cause, or any arteriovenous fistula, we have presumed that the aneurysmal dilation is congenital.

Two classifications have been proposed for aneurysms of the inferior caval vein. The first was related to the origin of the aneurysm, and included subsets of congenital, acquired, and aneurysms deemed secondary to arteriovenous fistulas.[2] The second classification was related to the anatomic location.[3] The classifications are obviously not mutually exclusive. Acquired aneurysms are usually secondary to trauma, or pathologic processes of the vessel wall such as inflammation, webs, or neoplasms. Our aneurysm would have fitted in the fourth category of the anatomic classification proposed by Gradman and Steinberg,[3] since it involved the hepatic and infrarenal segments of the inferior caval vein, albeit without interruption of the vein.

Management of the aneurysms depends on their nature. Those complicated by thromboembolism, the inferior caval venous syndrome, or rupture, usually require surgical intervention. Saccular aneurysms in such settings usually require complete or partial resection. Others require different procedures, including interposition of prosthetic grafts,[4] partial resection with ligation of the infrarenal caval veins,[5] or tangential resection with primary lateral venorraphy.[6] Uncomplicated aneurysms discovered incidentally, in contrast, may not require any surgical intervention. These aneurysms, as in our patient, may be followed-up periodically, looking carefully for any increase in size of the aneurysm, or development of any complications.

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