

—Report on Experiments and Clinical Cases—

Celiac Artery Aneurysm: A Case Evaluated Preoperatively with Three-dimensional Computed Tomographic Angiography

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Abstract

In a 63-year-old woman computed tomography (CT) incidentally detected a celiac artery aneurysm approximately 3 cm in diameter. While conventional angiography suggested that the splenic artery and common hepatic artery arose from the celiac artery aneurysm, three-dimensional CT angiography indicated that the aneurysm involved only the mid portion of the celiac artery. Considering the risk of eventual aneurysm rupture, surgery was performed. Aneurysmectomy and devascularization of hepatic, splenic, and celiac arteries were carried out following complete cross-clamping of the celiac artery. The distal segment of the celiac artery was directly anastomosed to the proximal segment in an end-to-end fashion. Histologically, the aneurysm wall showed atheromatous changes. Contrast-enhanced abdominal CT confirmed complete removal of the celiac artery aneurysm, and postoperative angiography confirmed good arterial flow. The patient recovered uneventfully after surgery, with normalization of transiently abnormal hepatic function parameters. In this case of celiac artery aneurysm, three-dimensional CT angiography was found to be valuable in determining the relationships of the aneurysms to important arterial branches. (J Nippon Med Sch 2001; 68: 444–446)

Key words: celiac artery aneurysm

Introduction

Celiac artery aneurysms, rare vascular lesions most often found incidentally during abdominal imaging, are important because of their potential for fatal rupture [1]. We describe a case in whom a celiac artery aneurysm was evaluated with three-dimensional computed tomographic (CT) angiography and treated by aneurysmectomy and reconstruction.

Case

A 63-year-old woman was admitted to Nippon

Medical School Hospital for evaluation of an abnormal shadow on a chest radiograph. Physical examination and laboratory results were normal. No hypertension was present. Chest CT with contrast administration incidentally showed a celiac artery aneurysm about 3 cm in diameter. No intrathoracic abnormality was seen (**Fig. 1**). By conventional angiography, the splenic artery and common hepatic artery appeared to arise from the celiac artery aneurysm (**Fig. 2**). However, three-dimensional CT angiography indicated that the aneurysm was confined to the mid portion of the celiac artery (**Fig. 3**).

Surgery was performed because of the possible risk of rupture. After the supraceliac abdominal aorta was

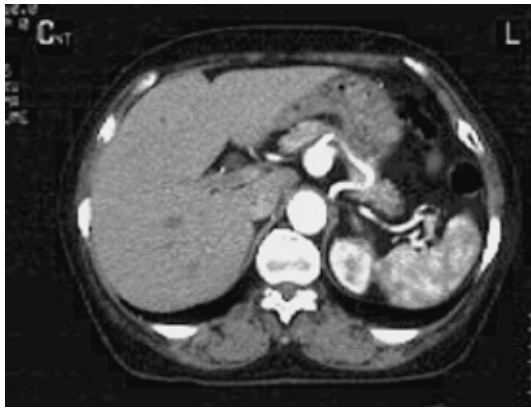


Fig. 1 Enhanced computed tomography shows a celiac artery aneurysm, approximately 3 cm in diameter.

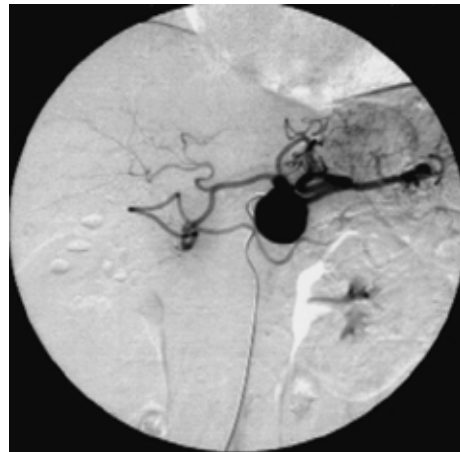


Fig. 2 A preoperative angiogram showing the celiac artery aneurysm.

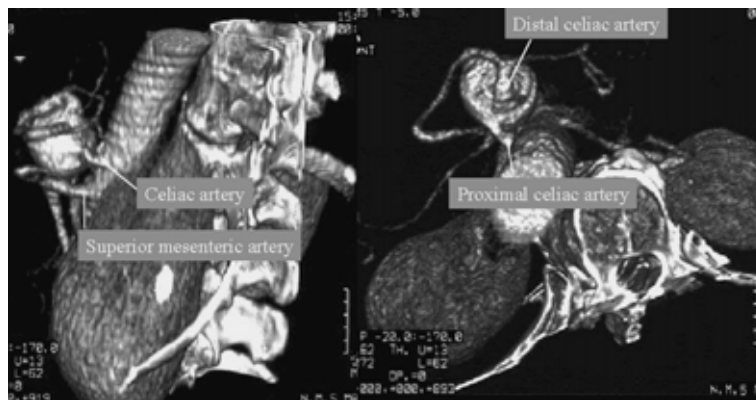


Fig. 3 Three-dimensional computed tomographic angiogram localized the celiac artery aneurysm to the mid portion of the celiac artery.

exposed through the lesser sac, the aneurysm and the celiac arterial branches were dissected. Aneurysmectomy and devascularization of hepatic, splenic, and celiac arteries were performed with complete cross-clamping of the celiac artery. The distal portion of the celiac artery including the origins of these branches was sutured directly to the proximal portion by end-to-end anastomosis. Histologic examination of the wall of the aneurysm revealed atheromatous changes. Abdominal CT with contrast confirmed total removal of the aneurysm, and postoperative angiography showed good arterial flow (Fig. 4). The patient recovered uneventfully after surgery, with normalization of transient postoperative hepatic function abnormalities.

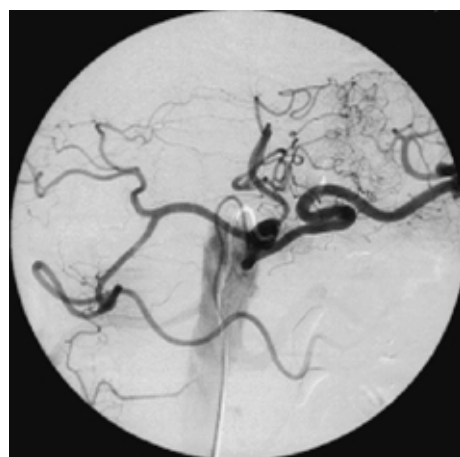


Fig. 4 Postoperative angiogram showing a good arterial flow.

Discussion

Visceral artery aneurysms are uncommon vascular lesions that carry significant risk of rupture or of erosion into adjacent viscera, resulting in life-threatening hemorrhage.

Celiac artery aneurysms are rare, accounting for only some 4% of all visceral artery aneurysms¹. Detection of celiac aneurysms, which are often asymptomatic, usually occurs incidentally. Approximately 15 to 20% of cases are complicated by rupture, which is associated with a mortality rate of 80 to 100%^{1,2}. This possibility makes treatment mandatory even in asymptomatic cases.

Three-dimensional CT angiography can fully visualize the anatomy of visceral arteries by processing spiral CT images obtained with contrast media. This greatly facilitates preoperative evaluation of visceral artery aneurysms. In the present case this type of angiography proved very useful, depicting the anatomic relationships of the celiac artery, the aneurysm, and celiac arterial branches in more detail than conventional angiography.

The treatment of celiac artery aneurysm consists of aneurysm resection with revascularization of the celiac artery or its branches as needed. Revascularization may be performed directly in some cases; other cases require indirect revascularization using prostheses or saphenous vein grafts. In our present case, aneurysmectomy was followed by successful reconstruction with a direct end-to-end anastomosis. According to a review of relevant cases in a report by

Veraldi et al.², 78.7% of celiac aneurysm operations included revascularization of the celiac artery or its branches; in 59.6% of this subgroup, revascularization was performed directly, while in 21.1% a Dacron or PTFE prosthesis was used and in 19.2% venous graft was used. Mortality after elective surgical repair of celiac artery aneurysm has ranged from 3.8 to 5%¹.

Outcomes of elective surgical treatment of aneurysms of the celiac trunk are satisfactory if resection is combined with successful revascularization of the celiac artery. Further, such surgery is mandatory, given the high risk of fatal rupture of untreated aneurysms.

In conclusion, we describe a case of a celiac artery aneurysm successfully treated by aneurysmectomy and reconstruction with a direct end-to-end anastomosis. Three-dimensional CT angiography facilitated planning of surgery by delineating the position and relationships of the aneurysm and celiac arterial branches, more accurately than conventional angiography.

References

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