Case Note  
Note de cas

Saddle embolism of the aorta with sudden paraplegia

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A saddle embolism of the aorta causes an acute ischemia of the lower extremities (LX). In a third of patients, various degrees of sensory and motor deficits occur, but sudden paraplegia is seen rarely and its cause is unclear.

Case report

On March 5, 2002, a woman 85 years of age (body surface area, 1.5 m²) had a sudden episode of severe pain in both groins with radiation to the LX. Ten minutes later, she was affected by paraplegia. Her pulse and heart rate were rapid and irregular; abdominal tenderness precluded the exclusion of an abdominal aortic aneurysm. Both LX were bluish and cold. She lost her sensory and motor function completely to the level of the hypogastrium, and her femoral and distal pulses were absent. Her urinary output was normal.

Electrocardiography showed atrial fibrillation–flutter with episodes of bradycardia and supraventricular tachycardia, from 25 to 166 beats/min. Arterial blood-gas analysis revealed metabolic acidosis. After a rapid intravenous (IV) bolus infusion of contrast medium administered while waiting for the operative room, computed tomography of the chest and abdomen disclosed a saddle embolism of the aorta at the level of L4 (Fig. 1). There was no evidence of an abdominal aortic aneurysm. Both LX were bluish and cold. She lost her sensory and motor function completely to the level of the hypogastrium, and her femoral and distal pulses were absent. Her urinary output was normal.

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She was given oxygen and an IV infusion of 0.9% NaCl with 100 mEq sodium bicarbonate per litre, along with a bolus of 6000 units of heparin sodium, followed by a drip of 600 units/h, and she was digitalized by an IV route.

Four hours later the common, superficial and deep femoral arteries were exposed through a bilateral vertical groin incision. She had no pain, no bleeding from vessels and no pulse in her LX. The left common femoral artery (CFA) had an extensive obstructive atherosclerotic plaque. The embolism was removed through a longitudinal arteriotomy of the left CFA and a transverse arteriotomy of the right CFA with use of a No. 6 Fogarty balloon catheter. Exploration of the right superficial femoral, popliteal and tibial arteries (carried out with the aid of a No. 4 Fogarty catheter) and of the right deep femoral artery (with a No. 3 Fogarty balloon catheter) yielded multiple clots.

Satisfactory backbleeding. Each CFA system was infused with 125 mL of a 0.9% NaCl solution with 2500 units of heparin sodium. The left CFA was endarterectomized and widened with a synthetic patch angioplasty.

After removal of the vascular clamps from the femoral arteries, the patient’s distal pulses returned, followed by a prompt return of sensory and motor function of both LX. The interval from the onset of paraplegia to reperfusion of the LX was about 6 h, 15 min.

She became fully ambulatory within a week and achieved a normal sinus rhythm with the help of a permanent dual-chamber (DDDR) pacemaker with a switch mode and sotalol hydrochloride (80 mg by mouth, every 12 h for 1 wk).

Comment

The arterial blood supply to the spinal cord is supplied to 1 anterior and 2 posterior spinal arteries of the cervical (C1–7) cord by the vertebral and subclavian arteries; to the arteries of the upper thoracic (T1–7) cord, by the aorta via the upper intercostal branches; to those of the thoracolumbar (T8–L5) cord, by the lower intercostal and lumbar arteries via the greater radicular artery (GRA—the arteria radicularis magna of Adamkiewicz2); and to the cauda equina, and rarely to the conus, by the lower lumbar, iliolumbar and lateral sacral arteries.2,3 The “watershed” system exists only between the cervical and the upper thoracic arterial blood supply to the spinal cord. In 85% of patients the GRA originates on the left side of the aorta, via branches

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Aortic embolism with paraplegia

of the intercostal arteries at the level of T7–12; in 60% of patients it originates via branches of the intercostal or lumbar arteries at the level of T8–L4. It rarely arises at the level of L3 (1.4%) or L4–5 (0.2%). A low origin of the GRA at the level of L1–5, or a high origin at T5–6 with the supplementary anastomotic arterial ansa of the conus at L1–5, occurs in 15% of patients.

We have assumed that in this patient, the cause of paraplegia was both ischemia of the lowest portion of the spinal cord from an occlusion of the supplementary anastomotic arterial ansa of the conus at the L4 level with a high origin of the GRA, and ischemia of the peripheral nerves.

Competing interests: None declared.

References

LE PRIX MACLEAN–MUELLER

À l’attention des résidents et des directeurs des départements de chirurgie

Le Journal canadien de chirurgie offre chaque année un prix de 1000 $ pour le meilleur manuscrit rédigé par un résident ou un fellow canadien d’un programme de spécialité qui n’a pas terminé sa formation ou n’a pas accepté de poste d’enseignant. Le manuscrit primé au cours d’une année civile sera publié dans un des premiers numéros de l’année suivante et les autres manuscrits jugés publiables pourront paraître dans un numéro ultérieur du Journal.

Le résident devrait être le principal auteur du manuscrit, qui ne doit pas avoir été présenté ou publié ailleurs. Il faut le soumettre au Journal canadien de chirurgie au plus tard le 1er octobre, à l’attention du Dr J. P. Waddell, corédacteur, Journal canadien de chirurgie, Division of Orthopædic Surgery, St. Michael’s Hospital, 30 Bond St., Toronto (Ontario) M5B 1W8.

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Attention: Residents and surgical department chairs

Each year the Canadian Journal of Surgery offers a prize of $1000 for the best manuscript written by a Canadian resident or fellow from a specialty program who has not completed training or assumed a faculty position. The prize-winning manuscript for the calendar year will be published in an early issue the following year, and other submissions deemed suitable for publication may appear in a subsequent issue of the Journal.

The resident should be the principal author of the manuscript, which should not have been submitted or published elsewhere. It should be submitted to the Canadian Journal of Surgery not later than Oct. 1.

Send submissions to: Dr. J. P. Waddell, Coeditor, Canadian Journal of Surgery, Division of Orthopædic Surgery, St. Michael’s Hospital, 30 Bond St., Toronto ON M5B 1W8.