Renovascular Hypertension after Laparoscopic Adrenalectomy in a Patient with Adrenal Adenoma

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Dear Sir,

Laparoscopic surgery is a newly developed technique that has application in many fields [1,2]. Although it appears superior to traditional surgery with regard to hospitalization time, morbidity, and cosmetic results, it still carries the risk of many complications [3-6]. Complications of laparoscopic adrenalectomy have not included renal artery injury, although the vasculature near the kidney is frequently jolted during the procedure. We describe a patient with adrenal adenoma who developed renal vascular occlusion immediately after undergoing retro-peritoneoscopic adrenalectomy for extirpation of the tumor.

A 23-year-old woman was admitted with progressive weight gain, oligomenorrhea, and purplish striae over lower abdomen and thighs. Pertinent physical findings included facial hirsutism, buffalo hump, proximal muscle weakness, thin skin, and ecchymoses. The blood pressure was 130/90 mm Hg. Endocrine investigations showed no suppression of plasma cortisol and urinary 17-hydroxycorticosteroid excretions on both low- and high-dose dexamethasone. A computerized tomography scan revealed a 2 × 2 × 2.4-cm homogeneous nodule in the left adrenal gland. The ¹³¹I-iodomethyl/19-nor-cholesterol (NP-59) scan disclosed an adrenal adenoma. She underwent retroperitoneoscopic adrenalectomy, during which three trocar catheters with various diameters were inserted sequentially along the posterior axillary line 2 cm above the iliac crest. A pneumoretroperitoneum was created to facilitate freeing, clipping, transection of the adrenal

Fig. 1. An intra-arterial digital subtraction angiography failed to opacify the left kidney, suggesting an occlusion over the proximal end of the left renal artery (arrow).

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artery, and dissection of the whole gland from the neighboring tissues. Histologically, the tumor was characteristic of adrenal adenoma. Immediately after the procedure, her blood pressure rose and sustained even with administration of nifedipine. Although ensuing studies

indicated cure of Cushing's syndrome, she was readmitted 1 month later due to poor control of the blood pressure. The plasma renin activity was 12.57 ng/ml/h, and the aldosterone concentration was 230 pg/ml. The effective renal plasma flow on the left was zero. An intra-arterial digital subtraction angiography disclosed complete occlusion at the proximal end of the left renal artery (fig. 1). In addition, the size of the left kidney had diminished from 10.8 to 6.4 cm, as shown by serial sonograms. She was treated with propranolol and felodipine instead of angiotensin-converting enzyme inhibitor to avoid further deterioration of the renal function. After 4 months of medication, the blood pressure returned to 120/80 mm Hg, and she quitted the treatment, although the plasma aldosterone level was still 637 pg/ml. This patient underwent retroperitoneo-scopic adrenalectomy because it bears several advantages over transperitoneal procedure [7]. Surgery per se seemed successful. However, marked hypertension abruptly developed thereafter. Since hypertension after surgical or laparoscopic treatment for adrenal diseases is rare except in pheochromocytoma, the possible causes of hypertension in this particular patient could only be residual tumor or injury of the renal artery. The latter was more likely because there was no hypertension before the procedure; the blood pressure rose abruptly to 150/110 mm Hg immediately after the operation and had sustained 160/110 mm Hg thereafter, and the left kidney underwent a significant decrease in size after the operation. More importantly, subsequent angiography disclosed complete occlusion of the vessel. The underlying mechanism might be that atherosclerosis and/or disappearance of elastic fibers, which was associated with hypercortisolism, had rendered the vascular intima 'fragile', and then inevitable manipulation of the retroperitoneal tissue during the procedure disturbed and tore the intima, leading to occlusion of the renal artery. Whatever the cause was, physicians should bear in mind that despite low morbidity and low mortality rates of laparoscopic adrenalectomy in treating Cushing's syndrome, it can still have unexpected side effects such as renal vascular hypertension.

References

- Higashihara E, Tanaka Y, Horie S, Aruga S, Nutahara K, Minowada S, Aso Y: Laparoscopic adrenalectomy: The initial 3 cases. *J Urol* 1993;149:973-976.
- McDougall EM, Clayman RV: Advances in laparoscopic urology. I. History and development of procedures. *Urology* 1994;43:420-426.
- Peterson HB, Hulka JF, Phillips JM: American Association of Gynecologic Laparoscopists' 1988 membership survey on operative laparoscopy. *J Reprod Med* 1990;35:587-589.
- Deziel DJ, Millikan KW, Economou SG, Doolas A, Ko S-T, Airan MC: Complications of laparoscopic cholecystectomy: A national survey of 4,292 hospitals and an analysis of 77,604 cases. *Am J Surg* 1993;165:9-14.
- Winfield HN, Donovan JF, See WA, Loening SA, Williams RD: Urological laparoscopic surgery. *J Urol* 1991;146:941-948.
- Wolf JS, Jr, Stoller ML: The physiology of laparoscopy: Basic principles, complications and other considerations. *J Urol* 1994; 152:294-302.
- McDougall EM, Clayman RV: Advances in laparoscopic urology. II. Innovations and future implications for urologic surgeons. *Urology* 1994;43:585-593.

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