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PRIMARY HYPERALDOSTERONISM (CONN'S SYNDROME); OUR RESULTS OF LAPAROSCOPIC SURGICAL TREATMENT.

Primer Hiperaldosteronizm (Conn Sendromu); Laparoskopik cerrahi tedavi sonuçlarımız.

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ABSTRACT

The objective of this study is to evaluate the results of laparoscopic surgery on cases of Primary Hyperaldosteronism (PHA) treated at the Department of General Surgery at Dursun Odabaş Medical Center, Yüzüncü Yıl University.

Five patients diagnosed with PHA underwent unilateral laparoscopic transperitoneal adrenolectomy at Yüzüncü Yıl University Department of General Surgery between 2011 and 2015. Their medical records were examined retrospectively for changes in blood pressure and potassium levels.

The study comprised 5 patients, all female, with a mean age of 42 years (ranging from 35 to 67). All patients presented with hypertension and hypokalemia, requiring medication. None of the cases were converted to open surgery. The mean postoperative stay was 3.2 days (ranging from 1 to 6 days). No postoperative complications were observed and all patients were discharged from the hospital without incident.

All patients became normotensive and normokalemic after laparoscopic surgical treatment.

PHA should be considered in cases where blood pressure cannot be controlled in spite of antihypertensive treatment. Laparoscopic adrenalectomy is a safe and efficient treatment option but should be performed before permanent damage is incurred.

Key words: Laparoscopy, adrenalectomy, hyperaldosteronism, and Conn's syndrome.

ÖZET

Bu çalışmada Yüzüncü Yıl Üniversitesi Tıp Fakültesi Genel Cerrahi kliniğinde laparoskopik olarak opere edilen Primer Hiperaldosteronizm (PHA) olguları ve sonuçları sunulmuştur.

2011 ile 2015 yılları arasında PHA nedeniyle tek taraflı laparoskopik transperitoneal adrenalektomi yapılan 5 olgunun kan basıncı değişikliklerini ve serum potasyum değerlerini içeren tıbbi kayıtları retrospektif olarak incelendi.

Olgularımızın tümü kadın olup, yaş ortalaması 42 yıl (en düşük 35, en yüksek 67)olarak bulundu. Tüm olgularda başvuru sırasında, medikal tedavi gerektiren hipertansiyon ve hipokalemi mevcuttu.

Postoperatif ortalama hastanede kalış süresi 3.2 gün (en düşük 1- en yüksek 6) olarak bulundu. Olguların tümü cerrahi tedavi sonrası normotansif ve normokalemik duruma gelmişlerdir. Hiçbir olguda açık cerrahiye dönülmemiştir ve postoperatif komplikasyon gözlenmemiştir. Bütün olgular sorunsuz olarak taburcu edilmiştir.

Sonuç olarak, antihipertansif tedaviye rağmen kan basıncı kontrol edilemeyen olgularda primer hiperaldosteroidizm düşünülmelidir. Hiperaldosteroidizme bağlı kalıcı hasarlar oluşmadan önce gerekli tedavisi yapılmalıdır. Laparaskopik adrenalektomi güvenli ve etkili bir tedavi seçeneğidir.

Anahtar kelimeler: Laparoskopi, adrenalektomi, hiperaldosternizm ve Conn Sendromu.

INTRODUCTION

Primary hyperaldosteronism (PHA) is a frequently diagnosed medical condition, particularly in patients with hypertension. Laparoscopic adrenalectomy provides a definitive surgical option in the treatment of PHA.

Primary hyperaldosteronism, also known as Conn Syndrome, is caused by an uncontrolled secretion from the adrenal gland (s) and is characterized by hypokalemia and it is currently more commonly recognised. This condition was considered an etiologic factor in approximately 1% of cases of hypertension. However, having examined the aldosteron-renin ratio in cases of hypertension, and thanks to advances in radiological and biochemical diagnostic methods, actual prevalence is now estimated at 10-40% (1,2)

Our hospital had not had any cases with a PHA diagnosis in which surgery was performed until 2010. The five cases represented in this study where laparoscopic surgery was performed all occurred within the last four years.

MATERIAL AND METHOD

Five patients diagnosed with PHA underwent unilateral laparoscopic transperitoneal adrenolectomy at Yüzüncü Yıl University Department of General Surgery between 2011 and 2015. The medical records of five patients who underwent unilateral laparoscopic transperitoneal adrenalectomy to treat PHA were examined retrospectively. Data examined included biochemical parameters, pathology reports, operation reports, changes in blood pressure and potassium levels.

Common features shared by all five cases include hypertension, hypokalemia, high plasma aldosterone levels, low plasma renin activity (PRA) and an aldosterone/PRA ratio greater than 30. Location of adrenal adenoma was achieved by CT and/or MRI.

The surgical method employed was transperitoneal laparoscopy, using a flank approach in the lateral position.

Table 1: Cases.

	Gender	Age	Preop Serum K Level (mmol/L)	Preop Plasma Aldosteron Level (ng/dL)	Preop PRA (ng/dL)	Adrenal Gland Size (mm)	Postoperative follow-up
Case 1	Female	67	1.9	51	0.31	25x15	39th month, Normokalemic, Normotensive
Case 2	Female	37	1.7	44	0.42	16x11	19th month, Normokalemic, Normotensive
Case 3	Female	34	2.6	49	0.36	20x15	18th month, Normokalemic, Normotensive
Case 4	Female	35	1.7	46	0.40	18x14	8th month, Normokalemic, Normotensive
Case 5	Female	39	2.5	23	0.30	17x13	7th month, Normokalemic, Normotensive

RESULTS

All patients presented with hypertension and hypokalemia, requiring medication. The mean postoperative stay was 3.2 days (with a range of 1 to 6 days). None of the cases were converted to open surgery. All patients reverted to normotension and normokalemia after laparoscopic surgery, and no postoperative complications were observed. All patients were discharged from the hospital without incident.

All patients became normotensive and normokalemic after laparoscopic surgical treatment.

Case I: Patient was a 67-year old female with serum potassium level of 1.9 mmol/L, plasma aldosterone level of 51 ng/dL, and PRA of 0.31 ng/dL. Patient had a lesion in the left adrenal gland measuring 25 x 15 mm which was compatible with

adenoma, left ventricular hypertrophy as shown by echocardiogram, severe mitral and tricuspid regurgitation and grade I-II hypertensive retinopathy.

Potassium and blood pressure values were in the normal range after laparoscopic transperitoneal left surrenalectomy. Patient was normotensive and normokalemic at the 39-month postoperative follow-up.

Case II: Patient was a 37-year old female with serum potassium level of 1.7mmol/L, plasma aldosterone level of 44 ng/dL, and PRA of 0.42 ng/dL. Patient had a lesion in the left adrenal gland measuring 16 x 11 mm which was compatible with adenoma, left ventricular hypertrophy as shown by echocardiogram, left atrial dilation, and examination of optic fundus showed normal result.

Potassium and blood pressure values were in the normal range after laparoscopic transperitoneal left surrenalectomy. Patient was normotensive and normokalemic at the 19- month postoperative follow-up.

Case III: Patient was a 34-year old female with serum potassium level of 2.6 mmol/L, plasma aldosterone level of 49 ng/dL, and PRA of 0.36 ng/dL. Patient had a lesion in the left adrenal gland measuring 15 x 29 mm which was compatible with adenoma, left ventricular hypertrophy as shown by echocardiogram, left ventricular diastolic dysfunction, and examination of optic fundus showed normal result.

Potassium and blood pressure values were in the normal range after laparoscopic transperitoneal left surrenalectomy. Patient was normotensive and normokalemic at the 18-month postoperative follow-up.

Case IV: Patient was a 35-year old female with serum potassium level of 1.7 mmol/L, plasma aldosterone level of 46 ng/dL, and PRA of 0.40 ng/dL. Patient had a lesion in the left adrenal gland measuring 18 x 14 mm which was compatible with adenoma, left ventricular hypertrophy as shown by echocardiogram, left ventricular diastolic dysfunction, and examination of optic fundus showed normal result.

Potassium and blood pressure values were in the normal range after laparoscopic transperitoneal left surrenalectomy. Patient was normotensive and normokalemic at the 8-month postoperative follow-up.

Case V: Patient was a 39-year old female with serum potassium level of 2.5 mmol/L, plasma aldosterone level of 23 ng/dL, and PRA of 0.30 ng/dL. Patient had a lesion in the left adrenal gland measuring 17 x 13 mm which was compatible with adenoma, left ventricular hypertrophy as shown by echocardiogram, left ventricular diastolic dysfunction, and examination of optic fundus showed normal result.

Potassium and blood pressure values were in the normal range after laparoscopic transperitoneal left surrenalectomy. Patient was normotensive and normokalemic at the 7-month postoperative follow-up.

DISCUSSION

Although the prevalence of PHA in a selected hypertensive population has been reported in specialized treatment centers, the presence of PHA in the general hypertensive population is reported to be 5-7% (3).

All of the patients in this study were female with an average age of 42. PHA is reported to be more common in females between the ages of 30-50. In the presence of hypokalemia, complaints such as muscle cramps, muscle weakness, paresthesia, treatment-resistant hypertension and spironolacton sensitivity were observed. Although all of the patients in this study were diagnosed with hypokalemia, according to the literature hypokalemia is more frequently encountered in untreated advanced stage cases and also most of the newly diagnosed cases might be normokalemic. Gordon et al. reported that out of 199 patients with hypertension with normal serum potassium levels, 8.5% had primary hyperaldosteronism (4).

In a comparative study of PHA and essential hypertension cases in which age and systolic blood pressure levels were matched, it was reported that stroke, myocardial infarction, atrial fibrillation, and ventricular hypertrophy were significantly more common in the PHA group (5). Furthermore, other studies have found that ventricular hypertrophy is significantly more common in patients with PHA (6,7). In an experimental study, it was reported that elevated aldosterone levels cause myocardial infarction via stimulation of vascular fibrinoid necrosis and cardiac fibroblasts (8). In the present study, LV hypertrophy was found by echocardiography in all of the cases. A significant reduction in LV wall thickness and mass one year after adenolectomy in other studies (9, 10).

When studies concerning this topic are examined, laparoscopic surgery was found to be the standard treatment. The following advantages associated with laparoscopic surgery were reported: small incision, less postoperative pain, rapid improvement and shorter hospital stays (11-14). In a study by Paul Meria, 14% of caseswere converted to open surgery and postoperative complications were reported in 10% of patients (15). In this study, none of the cases were converted to open surgery and no postoperative complications were observed. All patients were discharged from the hospital without incident.

All of the cases became normotensive and normokalemic after surgical treatment. In the studies which evaluated a broad series of cases postoperative normalization of potassium levels; but in about 25% of the cases, especially cases in which a late surgical treatment was performed, a permanent elevated blood pressure value were reported (16-18).

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