ORIGINAL ARTICLE

Clinical assessment of patients with acromegaly

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Background: In this study, we aimed to retrospectively evaluate treatment outcomes and treatment methods in acromegaly patients. **Materials and Methods:** The study included 65 acromegaly patients followed in Sakarya University Faculty of Medicine Department of Endocrinology in Turkey between 2004 and 2013. Clinical, biochemical, and radiological data were obtained retrospectively from the medical files of the patients. All cases have been discussed in the endocrinology and pituitary surgery council, and a multidisciplinary treatment approach had been chosen in management. **Results:** Sixty-five patients were included in the study. Of the patients, 57% were female. Mean age was 45.3 ± 9.2 years old. Of the cases, 12.3% were microadenomas (n = 8, tumor diameter <10 mm) and 87.6% were macroadenomas (n = 57, tumor diameter ≥10 mm). In our study, 70% remission was achieved with the first operation and medical treatment. Patients with invasive acromegaly without remission after the first operation underwent reoperation, medical treatment, and conventional or stereotactic radiotherapy and achieved 45% remission rate. **Conclusion:** Pituitary surgery is the first treatment option for acromegaly. In patients who could not be remissioned after the first operation, remission can be achieved by combined therapy consist of reoperation, medical treatment, and conventional or stereotactic radiotherapy.

Key words: Acromegaly, pituitary gland, treatment

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INTRODUCTION

Pituitary adenomas make up more than 90% of all pituitary tumors. Growth hormone (GH)-secreting pituitary adenomas clinically present as acromegaly.[1] Treatment of the disease includes surgical treatment, medical treatment, and radiotherapy. Surgery is the first-treatment option in most patients. Patients with heightened anesthesia risks may not be suited to surgical treatment. Medical treatment may be used first for these patients.[2,3] Radiotherapy may be applied as adjuvant therapy in combination with medical therapy in patients with residual GH hypersecretion after surgical treatment.[4] We aimed to retrospectively evaluate treatment outcomes for various treatment methods in acromegaly patients admitted to our clinic.

MATERIALS AND METHODS

The study included 65 acromegaly patients followed in Sakarya University Faculty of Medicine Department of Endocrinology in Turkey between 2004 and 2013. Clinical, biochemical, and radiological data were obtained retrospectively from the medical files of the patients. All cases have been discussed in the endocrinology and pituitary surgery council, and a multidisciplinary treatment approach had been chosen in management. Serum insulin-like growth factor 1 (IGF-1) levels were investigated in patients with clinical findings consistent with acromegaly. Oral glucose tolerance test (OGTT) was performed for GH measurements in patients who had supranormal serum IGF-1 level (age and sex-adjusted >2 standard deviations) second time. Rare GH >0.4 ng/mL was accepted as abnormal. Pituitary magnetic resonance imaging (MRI) was performed in patients with failure in GH suppression test, supranormal serum IGF-1 levels, and those who have high clinical suspicion for acromegaly diagnosis.[5] The patients were divided into two groups, microadenoma (<10 mm) and macroadenoma (≥10 mm), according to tumor size as shown by MRI.[6] Patients with basal serum GH levels <1 ng/ml and IGF-1 levels for the first 3–6 months after surgery which were normal

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according to age and gender, as well as GH levels <0.4 ng/ml in an OGTT, were considered to be in remission.[7] The patients were classified according to categories including remission after surgical and medical therapies, remission after combination therapies, second-look operation due to progression after surgical and medical therapies, and absence of remission despite all therapies. The patients were operated by two surgeons experienced in pituitary tumor surgery.

RESULTS

A total of 65 patients were included in our study. Of the patients, 57% (n = 37) were female and 43% (n = 28) were male. Mean age was 45.3 ± 9.2. Complaints on admission were growing in hands-feet, chin (67.8%), headache (18.7%), and visual symptoms (7.8%) [Table 1]. Of the cases, 12.3% were microadenomas (n = 8, tumor diameter <10 mm), while 87.6% were macroadenomas (n = 57, tumor diameter ≥10 mm). Surgical treatment was applied to 91.6% (n = 55) of the patients, while 92.7% (n = 51) were operated by transsphenoidal approach. Reoperation was done for 18.1% (n = 10) of the patients who received medical treatment after surgery. Of the patients, 25% (n = 15) were treated with surgical treatment; 13.3% (n = 8) with surgical and medical treatment. The ratio of the patients showing progression was 30% (n = 18) [Table 2]. Medical treatments included octreotide long-acting release (LAR) (n = 25); octreotide LAR + pegvisomant (n = 6); and lanreotide autogel (n = 5) partial pituitary insufficiency were seen in 77.61% (n = 52) of the study population. Oral administration of octreotide LAR 30 mg/28 days and deep intragluteal injection of lanreotide autogel 120 mg/28 days, pegvisomant 20 mg/day subcutaneous injection, and oral cabergoline 2–3 mg/week were administered for the medical treatment.

Table 1: Symptoms of acromegaly patients

Symptoms	Symptom rate (%)
Enlargement in hands, feet, and mandible	67.8
Headache	18.7
Visual symptoms	7.8
Hoarseness	1.5
Loss of libido	1.5
Tongue enlargement, snoring	1.5
Nonspecific symptoms	1.8

DISCUSSION

Acromegaly is a systemic disorder which influences many organs. It is clinically characterized by somatic impairment and systemic involvement. Enlargement of the hands, feet, and fingers and soft-tissue thickening are often seen.[8] Enlargement in hands and feet, mandible (67.8%), and headache (18%) were the most common findings on admission in our study. The aim of acromegaly treatment is to normalize GH secretion, IGF-1 levels, correct signs and symptoms of the disease, prevent complications, control tumor growing, preserve anterior pituitary functions, and prevent tumor recurrence.[9] In our study, surgical treatment was applied in 91.6% of the patients. Reoperations were performed in 18.1% of cases. Remission rates were found as 42%–70% in the studies done using endoscopic and microscopic transsphenoidal surgery and 2000 remission criteria.[10,11] In our study, postoperative remission rates of the patients were found to be significantly lower than those reported in the literature. This is because the majority of the patients included in the study were challenging cases evaluated in the surgical and medical council for pituitary diseases. In addition, most of these cases seem to have undergone insufficient resection in their first operation. Postoperative residual adenomas were detected around the suprasellar region by pituitary MRI. The low remission rate with medical therapy is consistent with residual tumor presence. There are limited options for the patients not experiencing biochemical remission following their first operation. Alternative treatments include medical treatment, radiotherapy, and reoperation. When repeated surgical treatment options were compared, they were found to be more effective and safe in treatment of patients with uncontrolled acromegaly. Similar remission rates may be achieved.[12] Combined treatment methods were applied to patients who did not have biochemical remission after the first operation. We found a remission rate of 45% with combined therapy which was consists of surgery, medical treatment, and conventional or stereotactic radiotherapy. Long-acting somatostatin analogs (octreotide LAR,

Table 2: Treatment outcomes in acromegaly cases

Parameters	Macroadenoma	Microadenoma
Remission with surgical treatment	25% (15)	-
Remission with surgical and medical treatment	13.3% (8)	-
Remission with surgical, medical treatment, and gamma-knife	8.3% (5)	-
Remission with surgical, medical treatment, and conventional radiotherapy	3.3% (2)	-
Remission with medical treatment	-	6.6% (4)
Remission with medical treatment and gamma-knife	-	1.6% (1)
Remission with reoperation, medical treatment, gamma-knife	11.6% (7)	-
No remission	30% (18)	-
Total	55	5

lanreotide and autogel) may be used if a cure cannot be effected following surgical treatment. GH levels may decrease 69%–72%, along with a decrease in adenoma size and general improvement of symptoms.[13] In our study, 7 years of remission were achieved with long-acting somatostatin analogs, cabergoline, pegvisomant, and conventional or radiotherapy in 36.6% patients who experienced recurrence after the first operation.

CONCLUSION

Pituitary surgery is the first treatment option for acromegaly in our clinic. In patients who could not be remissioned after the first operation, remission can be achieved by combined therapy consist of reoperation, medical treatment, and conventional or stereotactic radiotherapy.

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Conflicts of interest
There are no conflicts of interest.

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