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MODESTUM

Case Report **OPEN ACCESS**

Continuity of care in acromegaly: Detecting and managing recurrence after surgical intervention

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ABSTRACT

Acromegaly is a rare disease being followed up by primary care team. It is usually caused by pituitary adenoma and the treatment would be resection of the tumour. But is surgical intervention the end of treatment for acromegalic patient? This case highlighted the continuity of care in a 65-year old gentleman who had been diagnosed acromegaly since the age of 31. He had undergone a transseptal transsphenoidal resection of his pituitary adenoma when he was 45-year-old. Postoperatively, there were still residual growth hormone (GH) and insulin like growth factor (IGF-1) secretions. However, during 20 years follow up after operation, despite the increasing level of GH and IGF-1, the management of acromegaly were neglected as the focus of treatment were shifted towards his other medical problem, which is diabetes and atrial fibrillation. During his latest follow up, his complaint of unspecified headache and expressed his worry regarding the recurrence of his condition. Repeated GH level showed an increase in its level and postulated the possibility of recurrent acromegaly. This case emphasizes the important of recognizing the level of GH and IGF-1 after surgical intervention in order to detect recurrence acromegaly by primary care and early referral to endocrine team.

Keywords: acromegaly, recurrent acromegaly, growth hormone, IGF-1

INTRODUCTION

Acromegaly is a rare disease [1] and its prevalence is approximate 20-80 cases per million population (cpmp) [1]. Meanwhile in Asia, the prevalence was 27.9 cpmp in Korea and only 150 patients who are reported under Malaysian endocrinologist follow up [2, 3]. In 19 national acromegaly registry, mostly in European country, which comprise of 16,000 acromegalic patient, showed that 75% of the disease were originated from pituitary adenoma, which secrete GH and 80.4% of them had undergone surgical intervention [1]. The demonstration of normal GH suppression after oral glucose challenge, oral glucose tolerance test (OGTT) and normalization of insulin like growth factor-1 (IGF-1) are the biochemical confirmation of remission after surgery [3, 4]. Only 72.9% of those who had done surgical intervention are in remission with 2.08% of recurrence [5]. The condition is controlled in 61.3% of the patients when they were judged on IGF-I level alone [1]. With 21% of patients are lost to endocrine follow up and 77 % of those who lost are continuing follow up under general practitioner. It is important for primary physician to acknowledge regarding recurrence of acromegaly, in order to detect them early to improve patient life.

CASE REPORT

Mr. MH is a known case of acromegaly since 1986, type 2 diabetes mellitus (T2DM) since 1999, and atrial fibrillation (AF) since 2016. He came to a university primary care clinic for regular follow-up to obtain the international normalised ratio (INR) for his warfarin treatment. At the time of consultation in 2020, he complained of nonspecific headache in the forehead area that had persisted for a week. The pain was pulsatile and worsened when he was hot. There was no visual disturbance, no weakness of the limbs, no numbness, and the pain was not aggravated by coughing or sneezing. There were no bleeding tendencies. Mr. MH felt that his acromegalic condition was worsening, with the sensation that his tongue was getting larger, making it difficult for him to speak and read Quranic verses. Mr. MHwas concerned that his headaches might be due to his acromegaly and that his condition might recur.

On examination, Mr. MH is found to be a well-built man. His blood pressure was 123/79 and his pulse was 80. He had features of acromegaly, such as prognathism, a large nose, and a prominent orbital ridge, as shown in **Figure 1**. He also had a large tongue or macroglossia, as shown in **Figure 2**. His hands and fingers are also wide like a spade, as shown in **Figure 3**. His other physical examination was unremarkable. His INR was 2.3 during the visit.

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Figure 1. Features of acromegaly such as prognatism (reprinted with permission of the patient)

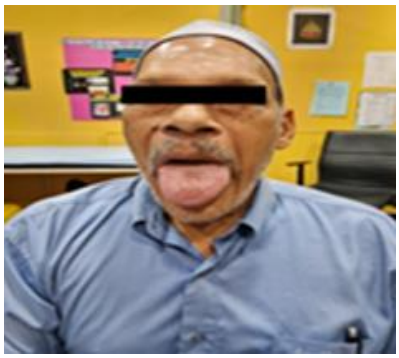

Figure 2. Macroglossia (reprinted with permission of the patient)

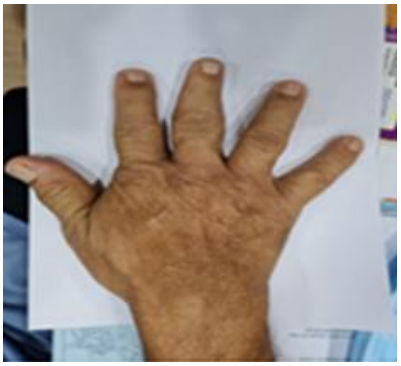

Figure 3. Spade like hand/fingers (reprinted with permission of the patient)

Looking back at Mr. MH acromegaly history, he was diagnosed acromegaly since 1986 when he was 31 years old when features of acromegaly were noted. At that time, he was also noted to have upper bitemporal hemianopia with visual field show bilateral temporal quadrantanopia. However, Mr. MH had defaulted his follow up until 14 years later due to logistic reason. His subsequent follow up in the year of 2000, showed his IGF-1 of >140 ng/ml (normal range 86.0-213.8) and an increase GH of 6.8 ng/ml (normal value <0.030-2.47). His other hormonal assay parameter was within normal range. He subsequently had undergone a transeptal transsphenoidal hypophysectomy operation in October 2000 in which the histopathology examination, HPE of the tumor showed pituitary adenoma. Post-operative glucose tolerance test of GH showed GH 0': 5.8/ 30': 5.5/ 60': 6.1/ 90': 6.6/ 120': 6.1 and a flat cortisol response suggesting of post transsphenoidal residual GH secretion and hypercortisolism. He was given oral cortisone for his hypercortisolism. His subsequent MRI post-surgery showed a comparatively reduction in the postoperative and the size of the tumor is not evident. The surgery was considered a success.

In July 2002, he had his blood tested again. His GH level had risen to 4.9 ng/ml and his IGF-1 level to 310 ng/ml; therefore, he was started on bromocriptine 5 mg per day. Subsequent GH measurement in 2006 and IGF-1 measurement in 2007 showed an increase to 6.5ng/ml and 709 ng/ml, respectively. Throughout the year, Mr. MH continued to be treated at the endocrine diabetic clinic for his T2DM, ignoring his acromegaly diagnosis. His bromocriptine tablet was also discontinued or not prescribed during one of the consultations. No further GH and IGF-1 tests were performed, although his GH and IGF-1 levels were trending upward. At the last consultation in August 2020, blood was drawn for GH and IGF-1 and sent in because he complained of "acromegaly" symptoms again. The blood result showed that his GH level had increased to 7.77 ng/ml and his IGF-1 level had increased to 279.02 ng/ml, indicating that acromegaly had returned. He was referred back to the endocrine team for further evaluation of his condition.

DISCUSSION

Family medicine specialists or general practitioners may not be part of the team caring for patients with acromegaly. However, there are acromegaly patients who are no longer managed by the endocrine team after surgery and may present to the general practise for other medical problems. According to a French study, 21% of patients with acromegaly are lost to endocrine follow-up, and 6% are permanently lost. Of those who lost follow-up, 77% were still under the care of a physician, usually a general practitioner. The main reason for dropping out of follow-up was that the patient had not been informed of the need for further follow-up [5]. Mr. MH 's case is one of the examples of acromegaly cases in which follow-up was not continued. But continuation of follow-up for anticoagulation therapy had highlighted his case in the university primary care clinic. Mr. MH does not know the importance of continuing care for his case, as this may not have been emphasised at the time of surgery from the beginning.

In 2011, the surgical remission rate of acromegaly was 72.9% and at a median follow-up of 5.06 years, the recurrence rate of acromegaly was 2.08%. It was found that suppression of GH to <1 µg/l during OGTT and IGF-1 within normal limits was reliable in diagnosing patient in remission [6]. According to that definition, the remission rate and late remission rate was 66% and 86%, respectively [7]. Measuring GH and IGF-1 level post operatively to diagnosed surgical remission are consistent with guideline from endocrine society for acromegaly and the Malaysian consensus of diagnosis and management of acromegaly [3, 8].

However, in Malaysia, the diagnosis was defined by consensus when GH levels were measured at 12 weeks and IGF-1 levels at 3 months after surgery. GH levels after an OGTT were suggested only if the patient had a GH level that was above the recommended level. It was also indicated that after surgical recovery, IGF-1 levels should be determined at least once a year. If the IGF-1 level showed a suspicion of recurrence, an additional OGTT should be performed. Based on this definition, Mr. MH did not meet the diagnosis of acromegaly remission after his surgery. His IGF-1 level was measured only three times within seven years after surgery. This could be due to the high

cost of IGF-1 and the availability of the test. It is only available at endocrine laboratories at a single central government hospital, few university hospital and private hospitals [3]. This might potentiate the neglect in management of acromegaly in this case.

Based on his GH and IGF-1 levels after surgery, the recurrence of acromegaly in Mr. MH is very likely. Acromegaly may lead to deleterious causes such as T2DM, arthropathy, cardiovascular diseases such as arrhythmia, which may cause increased morbidity and mortality [9, 10]. Recurrent acromegaly in Mr. MH should be treated effectively because it could also alter the course of Mr. MH other medical conditions such as T2DM and AF.

In conclusion, despite the rarity of this case, the primary care physician should consider modifying the treatment goals in acromegaly. By understanding the importance of GH and IGF-1 levels in the diagnosis of acromegaly recurrence, we can improve our treatment of patients with lost acromegaly who may come to our clinic.

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Declaration of interest: No conflict of interest is declared by authors.

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