CASE REPORT

Case Report: Gorham-Stoute Syndrome with Involvement of Majority of Mandible, and Partial Maxillary, Temporal and Zygomatic Bones

Mustafa Kürşat Evrenos¹ · Merve Özkaya¹ · Murat Yaman¹ · Levent Yoleri Proff¹

Received: 15 April 2015 / Accepted: 11 November 2015 / Published online: 8 December 2015
© The Association of Oral and Maxillofacial Surgeons of India 2015

Abstract The Gorham-Stout syndrome is a rare condition in which spontaneous, progressive resorption of bone occurs. The diagnosis is based on clinical, radiological and histopathological findings after excluding other etiologies and as a result it is often delayed. We present the case of a 21-year-old male diagnosed with Gorham-Stout syndrome with involvement of the majority of the mandible, partial involvement of right maxillary, temporal and zygomatic bones and discuss its diagnostic and therapeutic features.

Keywords Gorham-Stoute syndrome · Total mandibular lysis

Introduction

Gorham–Stout syndrome (GSS) is a rare disease belonging to the primary idiopathic osteolysis syndromes. Etiology still remains unclear. It is a bone disease that results from uncontrolled endothelial proliferation of lymphatic and vascular vessels in bone and soft tissues around it, resulting in destruction and resorption of bone matrix [1]. The

disease is not fatal by itself and the prognosis of the condition is generally considered to be good with overall mortality of about 13 %. GSS is nonhereditary and may occur at any age, although it is most commonly seen in young adults and rarely in the elderly [2]. The symptoms are variable and mortality depends on the affected area [3]. The maxillofacial region is one of the regions frequently affected. The first maxillofacial case was described by Romer et al. [4] in 1928, and since then the number is increasing. In this case we present a patient with GSS that caused almost totally osteolysis of bilateral mandible, including right unilateral zygomatic and maxillary bone partial lysis which is a rare entity.

Case

A 21-year-old male patient was admitted to the clinic for medical board report. In history, the patient was admitted to chest diseases department with dyspnea and persistent cough at the age of 19. The patient gave a history of mandible fracture after trauma at the age of 6. On examination, the patient's pectus carinatum and micrognathia was detected (Fig. 1). No mandibular bony support was palpated. He has no teeth visible in mandible. Hard palate was narrow and upper canine teeth were not on the line (Figs. 2, 3). Thoracic CT showed bilaterally pleural and pericardial effusion (Fig. 4). Maxillofacial CT showed that only left condyle and coronoid process of mandible were present. Also right maxillary, temporal and zygomatic bones were partially osteolytic (Figs. 5, 6). Bone survey showed diffuse lytic lesions in whole body and mandible disappeared as a conclusion of lysis compatible with “vanishing bone phenomenon”. Complete blood count (CBC) and coagulation parameters (PT, aPTT, INR) were

✉ Mustafa Kürşat Evrenos
mkevrenos@hotmail.com

Merve Özkaya
merveozkaya@hotmail.com

Murat Yaman
drmyaman@mynet.com

Levent Yoleri Proff
yoleri@superonline.com

¹ Reconstructive and Aesthetic Surgery Department, Celal Bayar University Medicine Faculty Plastic, 45100 Manisa, Turkey

Fig. 1 Severe micrognathia and pectus carinatum deformity

Fig. 2 Upper canine teeth are located anteriorly to 2 incisors and 1 premolar teeth

Fig. 3 Narrow hard palate

Fig. 4 Bilaterally diffuse chilothonax

Fig. 5 Only *left* condyle and coronoid process segment is visible in 3D CT

normal. In biochemical analysis of blood, level of serum LDH, LDL and triglycerides were determined high (LDH:308 U/L, LDL: >400 mg/dL, Triglycerides: 2031 mg/dL). Serum calcium and magnesium levels were normal. In hormonal analysis; serum TSH, free T3, T4, calcitonin, PTH, osteocalcin and bone ALP level were

Fig. 6 Involvement of *right* temporal, zygomatic and maxillary bones

normal and 25-hydroxyvitamin D level was low (14.6 ng/dL). Urinary deoxypyridinoline (DPD) level was high (11.844 nM/mMcre). Bone densitometry showed diffuse osteopenia. CT-guided bone marrow aspiration biopsy from right iliac bone lytic lesion was reported as normal. CT-guided tru-cut bone biopsy from same lytic lesion performed and reported as mature bone tissue. Thoracentesis of pleural effusion was reported as chylothorax and benign cytology. Lymphoscintigraphy was performed and did not report any pathology. The patient was diagnosed as GSS due to clinical, radiological and histopathological findings. The patient was given lipid poor diet. Palliative rapid thoracentesis was performed for chylothorax. Bisphosphonates therapy was started for treatment of osteoporosis. Mouth opening was over 3 cm and oral diet of patient was enough with soft diet. There was no loss of weight. The patient did not have any request for therapy for maxillofacial structures, and surgical treatment was not recommended.

Discussion

GSS was first defined by Jackson in 1872 [5]. In 1954, Gorham and Stout presented the disease as a syndrome [6]. It is believed to have equal prevalence in males and females, but some authors suggest males are more commonly affected [4]. There is no family history of GSS in affected people [7], our patient also did not give such history. Generally it is diagnosed before the age of 40 [1]. All the bones of the body may be influenced, among facial bones the mandible is most frequently affected [8]. Ethology is not clear. Osteolysis secondary to angiomas [9], increased osteoclast activity

due to high level of IL6 [2] and minor traumas are accused [1]. Our patient gave a history of minor trauma in childhood. There are no general symptoms that accompany the disease, but some symptoms such as pain, progressive weakness, edema and skeletal deformities may occur. These symptoms depend on the side of involvement. The diagnosis is accounted by radiologic examination, clinical and histopathological findings of the affected area.

The differential diagnosis of this condition includes acroosteolysis of Hajdu and Cheney, generalized lymphatic anomaly (GLA). Also other disorders seen with systemic or localized bone lysis such as Paget Disease (PD) and Langerhans Cell Histiocytosis (LCH) should be considered. Hajdu-Cheney syndrome (HCS) is a very rare, heritable disorder of connective tissue seen with osteoporosis. It has autosomal dominant inheritance. Frontal bossing, low hairline at forehead, low set ears, long philtrum, micrognathia and premature loss of teeth are characteristic features of the disease [10]. Our patient had no family history and none of clinical features were present except micrognathia. GLA is a multisystem disorder that is characterized pathologically by a persistence of dilated lymphatics. Bone involvement should be present but multiple lytic lesions confined to the medullar cavity and there is no cortical destruction [11]. In our case, lymphoscintigraphy was normal and lytic lesions were located at the subcortical area of bones. LCH can be diagnosed histopathologically by S100 and CD1a stained dentritic cells obtained from lytic lesions. In our case, both bone marrow aspiration biopsy and tru-cut bone biopsy obtained from lytic lesions were reported as normal. PD has characteristic plane X-ray image called 'cotton-wool image'. Bone ALP level in serum and urinary DPD level are high. In our case, there was 'vanishing bone image' and bone ALP level was normal.

GSS is a progressive disease but rarely fatal, the most common sequelae are those from fractures [12]. The process usually involves one bone, but progression from one bone to the others is possible. Osteolysis of the entire mandible that progresses to the maxilla, skull and the spine has been reported [8]. Chylous pericardial and pleural effusion due to vertebral, costal, scapular and sternal affection is related to poor prognosis of disease; and chylothorax is probably the most serious complication that can lead to death [13]. Respiratory failure can occur when the cervical spine or ribs are involved. Another life-threatening complication of GSS is meningitis secondary to CSF leakage [14].

The treatment strategy has no specific guideline and consists of surgical and radiation therapy, also medical therapy modalities are commonly developing with further investigations. Basically, estrogens, calcium, bisphosphonates, vitamin D, fluoride and calcitonin are used in medical therapy [1]. Surgical therapy, such as resection and reconstruction with bone grafts or flaps of the diseased

tissue, is frequently unsuccessful due to fragility of donor vessels or reabsorption of grafted bone [4, 15–17]. Recalcification of the osteolytic areas does not spontaneously occur; therefore reconstruction should be undertaken once disease process is arrested. Low dose radiotherapy may be suggested to prevent prognosis of osteolysis [1], but its complications should be carefully considered especially in patients with facial bones involvement because of the potential risk of orofacial side-effects, such as radiation-induced osteonecrosis of the jaws [4]. Chylothorax in some cases requires ligation of the thoracic duct [12]. Our patient had pleural effusion and rapid Thoracentesis therapy was done but due to continuous pleural effusion, he was considered for pleurodesis by respiratory department; but after regular controls there was no necessity for invasive treatment and only bisphosphonates therapy proceeded. Because the disease is often self-limiting, conservative treatment appears to be an appropriate treatment option [1]. In this case, the patient did not have major difficulty in oral regimen and suffer from loss of weight, and did not request for any surgical therapy and so no surgical therapy was suggested. At present, the patient remains under observation by both clinics.

Conclusion

Gorham's syndrome is rare and due to variable symptoms is a hardly diagnosed disease. Histopathological features and molecular components are still unrevealed. There is still no standard treatment concept of this disease. The decision of therapy and a treatment guideline may be formed with new cases and further investigations in the future.

Compliance with Ethical Standards

Conflict of interest The authors have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

References

- Gondivkar SM, Gadbail AR (2010) Gorham-Stout syndrome: a rare clinical entity and review of literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 109(2):e41–e48. doi:[10.1016/j.tripleo.2009.08.043](https://doi.org/10.1016/j.tripleo.2009.08.043)
- Colucci S, Tarabozetti G, Primo L, Viale A, Roca C, Valdembrì D, Geuna M, Pagano M, Grano M, Pogrel AM, Harris AL, Athanasou NN, Mantovani A, Zallone A, Bussolino F (2006) Gorham-Stout syndrome: a monocyte-mediated cytokine propelled disease. *J Bone Miner Res Off J Am Soc Bone Miner Res* 21(2):207–218. doi:[10.1359/JBMR.051019](https://doi.org/10.1359/JBMR.051019)
- Florhinger A, Bottger E, Claass-Bottger F, Georgi M, Harms J (1998) Gorham-Stout syndrome of the spine. Case report and review of the literature. *RoFo Fortschritte auf dem Gebiete der Röntgenstrahlen und der Nuklearmedizin* 168(1):68–76. doi:[10.1055/s-2007-1015184](https://doi.org/10.1055/s-2007-1015184)
- Escande C, Schouman T, Francoise G, Haroche J, Menard P, Piette JC, Bertrand JC, Ruhin-Poncet B (2008) Histological features and management of a mandibular Gorham disease: a case report and review of maxillofacial cases in the literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 106(3):e30–e37. doi:[10.1016/j.tripleo.2008.02.028](https://doi.org/10.1016/j.tripleo.2008.02.028)
- Jbs J (1838) A singular case of absorption of bone (a boneless arm). *Boston Med Surg J* 18:2
- Gorham LW, Stout AP (1954) Hemangiomas and its relation to massive osteolysis. *Trans Assoc Am Phys* 67:302–307
- Moller G, Priemel M, Amling M, Werner M, Kuhlmeier AS, Dellling G (1999) The Gorham-Stout syndrome (Gorham's massive osteolysis) a report of six cases with histopathological findings. *J Bone Joint Surg Br* 81(3):501–506
- Al-Jamali J, Glaum R, Kassem A, Voss PJ, Schmelzeisen R, Schon R (2012) Gorham-Stout syndrome of the facial bones: a review of pathogenesis and treatment modalities and report of a case with a rare cutaneous manifestations. *Oral Surg Oral Med Oral Pathol Oral Radiol* 114(6):e23–e29. doi:[10.1016/j.oooo.2011.08.016](https://doi.org/10.1016/j.oooo.2011.08.016)
- Lee S, Finn L, Sze RW, Perkins JA, Sie KC (2003) Gorham-Stout syndrome (disappearing bone disease): two additional case reports and a review of the literature. *Archiv Otolaryngol Head Neck Surg* 129(12):1340–1343. doi:[10.1001/archotol.129.12.1340](https://doi.org/10.1001/archotol.129.12.1340)
- Palav S, Vernekar J, Pereira S, Desai A (2014) Hajdu-Cheney syndrome: a case report with review of literature. *J Radiol Case Rep* 8(9):1–8. doi:[10.3941/jrcr.v8i9.1833](https://doi.org/10.3941/jrcr.v8i9.1833)
- Lala S, Mulliken JB, Alomari AI, Fishman SJ, Kozakewich HP, Chaudry G (2013) Gorham-Stout disease and generalized lymphatic anomaly—clinical, radiologic, and histologic differentiation. *Skelet Radiol* 42(7):917–924. doi:[10.1007/s00256-012-1565-4](https://doi.org/10.1007/s00256-012-1565-4)
- Posadas MD, Viejo Stuart S, Romano O, Giamello A (2014) Gorham-Stout syndrome: a case report. *Eur Rev Med Pharmacol Sci* 18(1 Suppl):81–83
- Brodzki N, Lansberg JK, Dictor M, Gyllstedt E, Ewers SB, Larsson MK, Eklund EA (2011) A novel treatment approach for paediatric Gorham-Stout syndrome with chylothorax. *Acta Paediatr* 100(11):1448–1453. doi:[10.1111/j.1651-2227.2011.02361.x](https://doi.org/10.1111/j.1651-2227.2011.02361.x)
- Morimoto N, Ogiwara H, Miyazaki O, Kitamura M, Nishina S, Nakazawa A, Maekawa T, Morota N (2013) Gorham-Stout syndrome affecting the temporal bone with cerebrospinal fluid leakage. *Int J Pediatr Otorhinolaryngol* 77(9):1596–1600. doi:[10.1016/j.ijporl.2013.06.004](https://doi.org/10.1016/j.ijporl.2013.06.004)
- Ohya T, Shibata S, Takeda Y (1990) Massive osteolysis of the maxillofacial bones. Report of two cases. *Oral Surg Oral Med Oral Pathol* 70(6):698–703
- Huang Y, Wang L, Wen Y, Zhang Q, Li L (2012) Progressively bilateral resorption of the mandible. *J Craniomaxillofac Surg Off Publ Eur Assoc Craniomaxillofac Surg* 40(6):e174–e177. doi:[10.1016/j.jcms.2011.08.011](https://doi.org/10.1016/j.jcms.2011.08.011)
- Paley MD, Lloyd CJ, Penfold CN (2005) Total mandibular reconstruction for massive osteolysis of the mandible (Gorham-Stout syndrome). *Br J Oral Maxillofac Surg* 43(2):166–168. doi:[10.1016/j.bjoms.2004.09.008](https://doi.org/10.1016/j.bjoms.2004.09.008)