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Original Research Article

Pattern of inflammatory salivary gland diseases among Sudanese patients

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Abstract: Inflammatory conditions are the most common pathology to affect the salivary glands. Typical features of a comprehensive range of pathology including obstructive and sialadenitis, Sjogrens syndrome, sarcoidosis and HIV sialopathy. This study aims to know the pattern of inflammatory conditions of the salivary glands among 105 Sudanese patients in Khartoum state. This is a retrospective, cross- sectional, analytic and hospital based study from January 2014 to May 2016. Conducted in Otorhinolaryngological, Head and neck and Oromaxillofacial hospitals. The commonest inflammatory disease is ranula in sublingual glands. The most common site of stones in salivary gland was within glandular tissue. Inflammatory conditions were most common in salivary glands.
Keywords: Salivary disease, inflammatory conditions

INTRODUCTION

Inflammatory conditions are the most common pathology to affect the salivary glands [1]. Acute sialadenitis is a bacterial inflammation of the salivary gland. It was typically affected one major salivary gland, most commonly the parotid, and it was commonly caused by Staphylococcus aureus, which has been cultured in 50% to 90% of cases. Streptococcal species and Haemophilus influenza are also common causes [2]. Sialolithiasis and duct strictures can impair salivary flow and predispose the patient to acute infection, but more commonly cause chronic or recurrent infections [2, 3]. Patients with acute sialadenitis typically presented with acute onset of pain and swelling of the affected gland. Physical examination may reveal indurations, edema, and extreme localized tenderness. Massage of the gland may express pus from the respective intraoral orifice [2, 3]. In chronic sialadenitisIt is typically less painful and it is associated with recurrent enlargement of the gland typically without erythema and it is also associated with conditions linked to decreased salivary flow, rather than dehydration. These conditions include calculi, salivary stasis, and a change in the fluid and electrolyte composition of the gland [4]. Sialolithiasis which is related to the formation and deposition of concretions within the ductal system of the gland, 80% percent of all salivary calculi occur in the submandibular gland, with approximately 70% of these demonstrable as radio-opacities on routine plain radiography consisting of intraoral occlusal radiographs[4]. Calculi may cause stasis of saliva, leading to bacterial ascent into the parenchyma of the gland, and therefore infection, pain and swelling of the gland. Some may be asymptomatic until the stone passes forward and can be palpated in the duct or seen at the duct orifice. Bimanual palpation of the floor of the mouth reveals a palpable stone in a large number of cases of submandibular calculi formation [4, 5].Sialadinosis refers to non-neoplastic non inflammatory swelling , the etiologies fall into five categories: Nutritional (vitamin deficiency, bulimia), endocrine (diabetes mellitus, hypothyrodism), metabolic (obesity, cirrhosis malabsorption), inflammatory – autoimmune (sjogren disease, heerfordt syndrome) and drug induced(thiourea).Physical examination shows a non tender swelling that is often bilateral and symmetrical [4]. Acute suppurative parotitis is a severe infection seen particularly in elderly dehydrated, debilitating conditions, and immunosuppressed states Nitipong had a study reported the first case of acute parotitis induced Eagle syndrome [6, 9]. Recurrent parotitis is a non-obstructive, non-suppurative inflammatory disease also known as juvenile recurrent parotitis which is

characterized by unilateral or bilateral parotid gland swelling attacks. Although the etiology is unknown, congenital malformations of the ducts, genetic predisposition, infections, allergies, autoimmune diseases, and some immune deficiencies are blamed and presented mainly by fever, malaise and pain [7, 8]. Mumps is an acute, systemic, highly infectious, communicable infection of children and young adults, caused by a paramyxovirus which transmited by airborn droplet spread. After an incubation period of 14 to 18 days. It is the most common cause of non-suppurative acute sialadenitis; 85% of cases occur in children younger than 15 years. Typically presented with fever, pain, and swelling of the parotid gland as well as otalgia and trismus and it is highly contagious and causes complications which included orchitis, facial palsy in children ,meningitis, encephalitis and sensorineural hearing loss [8, 10,11]. Sjögren's syndrome is a chronic inflammatory disorder of the exocrine glands with multiple non exocrine feature and progressive autoimmune disorder mainly characterized by xerophthalmia, xerostomia, and parotid enlargement, may be unilateral or bilateral and painful swelling may also be noted, it is primarily managed medically, but some patients require surgical management [12,14]. Sjögren's syndrome is a relatively in association with other autoimmune diseases, most commonly lupus and rheumatoid arthritis (RA), and also associated with dental caries, trouble swallowing and difficult speaking without the use of continued lubrication. Enlargement of parotid or other major salivary glands occurs in two-thirds of those patients with primary Sjögren's [13]. The disease most commonly appears in people aged 40-60 years, but it may affect small children. The prevalence of parotitis in female to male was approximately 9:1 and the involved parotid gland was enlarged and tender at times [14].The oral ranula and plunging ranula are cystic extravasation mucoceles that arise from sublingual gland and usually from a torn of duct of rivinus. The sublingual gland is a spontaneous secretor and the salivary flow is resistance to obstruction which is caused by fibrosis induced by extravasations [15].Ranula was most prevalent in the second decade of life and slightly more common in females (male to female ratio of 1:1.2), but a distinct male predilection was noted for the plunging ranula (male to female ratio of 1: 0.74) [16].

PATIENTS AND METHODS

This retrospective hospital based cross-sectional study from January 2014 –May 2016. The Study was done in Khartoum hospitals, in Sudan, 105 patients were presented to these hospitals complaining of salivary glands inflammatory conditions.

Data collection

Detailed structured questionnaire was filled by each hospital respondent after obtaining the consent.

Data management and analysis

Data analyzed using statistical Package for Social Science.

Ethical clearance

I explained verbally to any patient the aim of the study, data collection, the need of investigations and regular follow up. Privacy of patient was a top priority.

RESULTS

The number of patients included in this study was 105. Collected from 2 departments; Otorhinolaryngological and Oro-maxillofacial departments: Khartoum ENT hospital, Khartoum dental hospital, Ibnsina specialized hospital and Africa specialized hospital. Forty four male patients (41.6%) compared to female 61patients (58.4%) with a predominance of female and M: F ratio was 1:1.8 figure (1).Regarding the age group affected in this study; in 0-10 years and in11-20 years 23 patients(21.9%) were equally affected, followed by the age 21-30 years 22 patients (21%), and 31-40years 14 pts (13.3%) . In 41-50years 8 patients (7.6%), then 51-60 5 patients (5.7%), followed by 61-70 years 7 patients (6.7%), finally 71-80 2pts (1.9%) table(1).Regarding residence, the largest percentage of patients were from Khartoum state; in Omdurman were 26.4%, then Khartoum were 21.9% and in Bahri were 19.1%.Those patients who are out of Khartoum state were 32.6% figure(2).Regarding the socioeconomic status; a low socioeconomic status was the commonest group affected in this study in 54.1%, moderate socioeconomic status in 44.0% and lastly high socioeconomic status in 2pts (1.9%) figure (3).The commonest gland affected in this study were: sublingual glands in 36%, followed by submandibular glands in 28.1% then minor salivary glands in 18.5% followed by parotid glands in 15.7%) figure (4). Regarding the symptoms of salivary gland inflammatory disease :pain with food chewing presented in 33 pts (31%),ear symptoms presented in 6pts (5.7%), Xerostomia was founded in 7 pts(6.7%), dry eye, obstructive symptoms and dental pain found in 3pts(2.9%). Inability to mouth opening and facial weakness were founded in2 patients(1.9%) table (2).Regarding the signs of salivary gland diseases, swelling and mass found in 105 patients(99%)the regular shape swellings founded in in 102 patients(97%), the fluctuant surface in 60 patients (57%), cervical lymph node enlargement in this study

founded in11patients(10.5%) Pus was discharged from duct in11 patients(5.6%), gland stone found in 10 patients (9.5%)and duct stone in5 patients(4.8%) table (3).Regarding the radiological results: plain x-rays was done in29 patients(27.6%), CT scan in 24 patients(22.0%) then ultrasound in 55 patients(52.4%) table (4).Associated systemic diseases with salivary glands inflammatory disease categorized as follows: Diabetes Mellitus in 3 patients(2.9%) then Rheumatoid Arthritis in 2 patients(1.9%), others like hypertension, kidney diseases etc in 6 patients (5.7%), table(5).Risk factors may predispose in salivary gland disorders were: smoking in 5.1% followed by alcohol in 0.6 % and snuffing in o.6%) figure(5).

Table-1: The age distribution among the study groups

Age groups	Frequency	Percentage
0-10	23	21.9%
11-20	23	21.9%
21-30	22	21%
31-40	14	13.3%
41-50	8	7.6%
51-60	5	5.7%
61-70	7	6.7%
71-80	2	1.9%
Total	105	100

Table-2: Symptoms of salivary gland diseases

Symptoms of salivary gland diseases	Number of patients(N 105)	Percentage
Pain with food chewing	33	31.4
Ear symptoms	6	5.7
Xerostomia	7	6.7
Dry eye	3	2.9
Obstructive symptoms	3	2.9
Dental symptoms	3	2.9
Inability to mouth opening	2	1.9
Facial weakness	2	1.9

Table-3: Sign of salivary gland diseases

sign of salivary gland diseases	Number of patient	Percentage
Swelling	104	99%
Regular shape of the glands	102	97%
Fluctuations of gland	60	57%
Cervical lymph node	11	10.5%
Gland stones	10	9.5%
Pus from the duct	11	10.5%
The presence of ulcer	6	5.7%
Duct stones	5	4.8%

Table-4: Uses of radiological image as a diagnostic tool for patients.

Radiology images	Number of patients	Percentages
Plan x-ray	29	27.6%
CT scan	24	22.9%
Ultrasound	55	52.4%

Table-5: Systemic diseases associated with salivary gland diseases

Systemic diseases	Frequency	Percentage
Diabetes mellitus	3	2.9.%
Rheumatoid arthritis	2	1.9%
Other diseases	6	5.7%
no association	94	89.5%
Total	105	100%

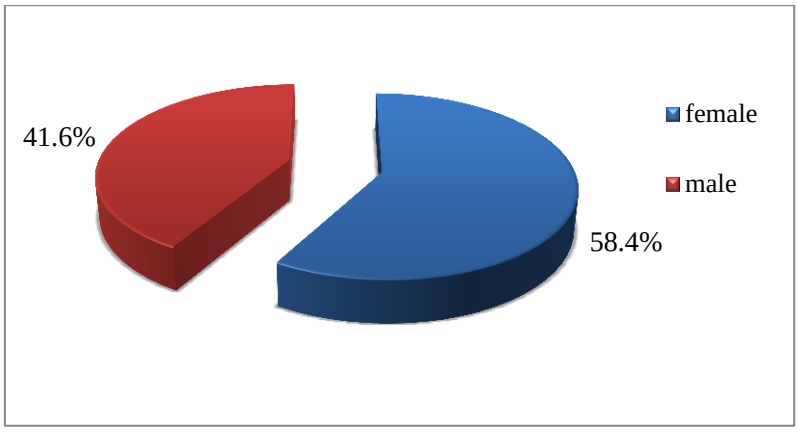

Fig-1: Gender distributions

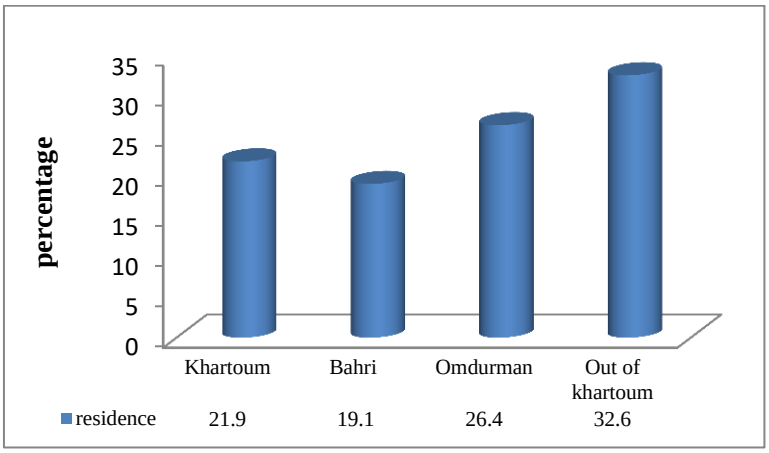

Fig-2: Patients residence

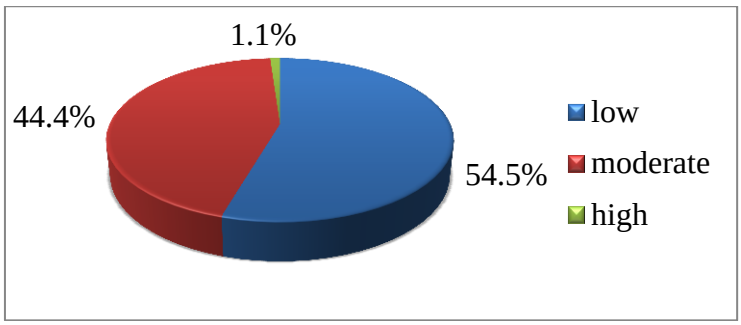

Fig-3: Socioeconomic status of the patients

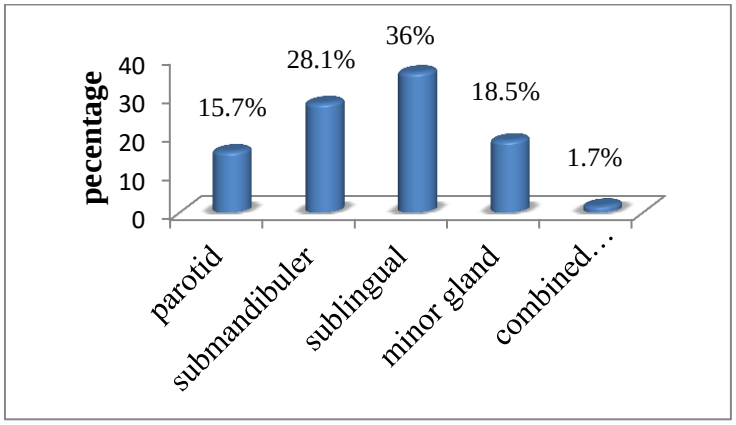

Fig-4: Types of glands affection

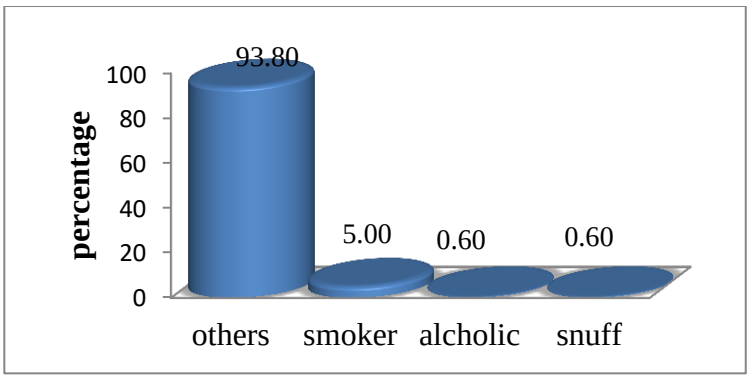

Fig-5: Risk factors that contributes in salivary gland diseases

DISCUSSION

The total number of patients in this study were 105patients with 20 ±SD average age and this was compatible to Pillmer who was concerned about Sjogren , Zaho who talked about ranula and Torabinia. Ahmad described it as tumors [14,16,20,18]. Contrary to that Yoskovitch studied this as a chronic sialadenitis [4]. Females were more affected than males with ratio 1.4:1 and this is compatible with Zaho, Pillmerand Torabinia [14,16,20]. In contrast to Sullieman,Yoogh and Jaso who mentioned the male predominance [19, 21, 22]. The commonest gland was sublingual gland (36%) followed by submandibular gland (28.1%) then minor gland and parotid gland (18.5%-15.7%) respectively, and this was in agreement with Harrison and Yoskovitch [4, 15].The common symptom is pain with food chewing which is similar to Yoskovitchand Siddiqui [4, 5]. Regarding the association of systemic disease and chronic medication in this study: DM and RA (2.8% and 1.1) respectively have a relation to salivary disease which is similar to Kassan [13]. Risk factor that contributed to salivary gland diseases in this study showed smoking 5.1% snuffing .6% alcohol 0.6% which is compatible to Sullieman and Yoogh [19, 21]. Regarding signs of salivary diseases in this study: the moderate size swelling is most common presentations 89.9% which is similar to Yoskovitch, Harrisonand Lee [4, 15,17]. Salivary gland stones were founded within the gland in 8.4% and within the duct in 4.5%which is the same result to Yoskovitch [4]. The commonest radiological study used in this study was plain x-ray in 28.7%and this in agreement with Yoskovitch who concentrates on inflammatory and obstructive cases [4].

CONCLUSION

- Ranula is the most common inflammatory condition in sublingual gland mostly affected female in 1st decade and Sialolithiasis seen in female in 4th decade.
- Sjogren syndrome involves minor salivary gland mainly occured in female gender in 4th-6th decade associated with RA.
- CT scan and MRI are grateful help in the diagnosis.

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