Original Article

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Prevalence of oral lesions and conditions in a group of patients at the Faculty of Dentistry, Mahidol University

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Objective: The aim of this study is to collect and analyze the data from patients who received treatment of oral lesions and conditions at the Special Clinic, Faculty of Dentistry, Mahidol University, Thailand in order to determine and evaluate prevalence of the conditions.

Materials and methods: The study protocol was reviewed and approved by the Faculty of Dentistry / Faculty of Pharmacy, Mahidol University, Institutional Review Board, Thailand. Five hundred and forty hospital charts of patients who attended the Special Clinic, Faculty of Dentistry, Mahidol University for the treatment of oral mucosal lesions and conditions were examined. Prevalence of oral lesions and conditions, referral sources and history of biopsy were reviewed.

Results: Out of 540 patients, 410 patients were female (76%) and 130 were male (24%). The average age of the patients was 54±15 years old. The most prevalent oral lesions and conditions treated were oral lichen planus / oral lichenoid lesion (37.76%) followed by burning mouth syndrome (9.07%), denture stomatitis (7.94%) and oral candidiasis (7.13%), respectively. Regarding the referral sources, general dental practitioners (41.6%) were the most prevalent persons who referred the patients for treatment of oral mucosal lesions and conditions, followed by periodontists (14.76%) and prosthodontists (14.76%). Approximately 26% of patients received biopsy for definite diagnosis.

Conclusion: The 4 most prevalent oral lesions and conditions referred for oral medicine treatment at the Special Clinic, Faculty of Dentistry, Mahidol University were oral lichen planus/oral lichenoid lesions, burning mouth syndrome, denture stomatitis and oral candidiasis. This result suggested that more information about these lesions and conditions should be distributed to Thai dental health care professionals for proper management of these lesions and conditions.

Keyword: history of biopsy, oral conditions, oral lesions, patients, prevalence, referral sources

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Introduction

Several types of oral lesions and conditions can occur in the oral cavity. These lesions include white, red, ulcerative, trauma-induced, infectious lesions, congenital abnormalities, autoimmune diseases, drug-induced oral lesions, and benign and malignant tumors. Examples of oral conditions that were treated by oral medicine specialists include oro-facial pain and other precancerous conditions. Often times, dentists encounter these lesions and conditions and have very little knowledge how to diagnose and manage these conditions. Because of this, they usually refer their patients to oral medicine specialists. In some diseases such as malignant neoplasm, it is better to refer the patients to oral medicine specialist or oral surgeon at the very beginning and as soon

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as possible. However, in patients who are presented with normal variation such as Fordyce's granules, there is no need to refer such patients to the specialist.

Many studies reported different distributions of oral diseases which may be due to different ethnicities, health care systems, types of survey, and the characteristics of targeted subjects. In a study conducted by Kleinman and colleagues, a survey of United States school children in kindergarten through grade 12 was performed [1] . Total of 39,206 children aged 5-17 years were examined. It was found that approximately 4% of the children had one or more oral mucosal lesions present at the time of the examination. Thirty three and 37% reported a history of recurrent herpes labialis and recurrent aphthous ulcers, respectively. The most prevalent lesions that were clinically observed were recurrent aphthous ulcers (1.23%), recurrent herpes labialis (0.78%), smokeless tobacco lesions (0.71%), and geographic tongue (0.60%) [1]. In 2003, Espinoza and colleagues conducted a survey of oral lesions in 889 elderly people older than 65 years old and found that the most prevalent oral lesions was denture stomatitis (22.3%), followed by irritative hyperplasia (9.4%), oral mucosal varicosities (9.0%), and frictional keratosis (6.0%), respectively [2]. In another study, the prevalence of oral mucosal lesions in Manipal, Karnataka State, India was evaluated [3]. A total of 1190 subjects who visited the Department of Oral Medicine and Radiology for diagnosis of various oral complaints over a period of 3 months were interviewed and clinically examined for oral mucosal lesions. The result showed the presence of one or more mucosal lesions in 41.2% of the population. The 5 most frequent oral lesions found were Fordyce's granules (6.55%), frictional keratosis (5.79%), fissured tongue (5.71%), leukoedema (3.78%), and smoker's palate (2.77%) [3]. Mucosal lesions like tobacco-related lesions (leukoplakia, smoker's palate, oral submucous fibrosis, and oral malignancies) were more prevalent among men than women. Denture stomatitis, herpes labialis, and angular cheilitis occurred more frequently in the female population. These studies suggested that difference in age groups, gender, settings, and ethnicity may influence the prevalence of different oral lesions and conditions.

The pattern of referral to oral medicine specialists was also different among different countries. The scope of practice, lesion occurrence, and utilization of referral based hospital and private practice oral medicine and oral pathology (OMP) services were investigated in Australia [4]. Clinical records of patients referred to a hospital (n = 500) and private OMP clinic (n = 1104) were audited. The majority of the referrals were generated by general dental practitioners. The most commonly seen problems were epithelial hyperplasia, oral candidiasis, oral lichen planus, xerostomia, recurrent aphthous ulcers, and burning mouth syndrome [4]. Entry into OMP care generally develops from a previous healthcare visit, and patients are initially unaware of OMP services. This observation is supported by the fact that most patients have previously been seen by an average of 2.2 healthcare practitioners prior to their OMP visit. A similar finding was reported by Miller and colleagues who found that 43.8% of patients in their survey had been seen by on average of 2.52 healthcare practitioners before being seen by an OMP practitioner [5]. These inappropriate referrals can result in increased expense and unnecessary time spent with specialists and poorly coordinated patient care [5].

Since there is no report that examined the prevalence of oral lesions and conditions seen by oral medicine specialists at the Special Clinic, Faculty of Dentistry, Mahidol University, Thailand, the aim of this study was to evaluate the scope of practice, lesion and condition occurrence, and referral patterns in patients who were referred for oral medicine service at the Special Clinic, Faculty of Dentistry, Mahidol University, Thailand.

The result from this study will give an information to what oral lesions and conditions should be emphasized and educated in dental practice. In addition, this study should prove valuable in determining best use of resources such as medication or instruments needed for the treatment of oral lesions and conditions.

Materials and Methods

Ethical consideration

The study protocol was reviewed and approved by the Faculty of Dentistry/Faculty of Pharmacy, Mahidol University, Institutional Review Board, Thailand (MU-DT/PY-IRB 2014/008.3101).

Clinical data

Five hundred and forty hospital charts of patients who attended the Special Clinic, Faculty of Dentistry, Mahidol University for the treatment of oral mucosal lesions and conditions by an oral medicine specialist (S.P.K.) were collected and reviewed. The data retrieved from the charts can be divided into 4 parts including general data comprising age, gender, referral source of the treatment, clinical and definite diagnosis, and number of patients who received biopsy result including histopathology and immunofluorescence.

Diagnosis of oral lesions and conditions

For some oral lesions, clinical diagnosis was definite diagnosis since the biopsy was not necessary for the diagnosis. Examples of these lesions were denture stomatitis, Fordyce's granules, lingual tonsil hyperplasia, traumatic ulcers, geographic tongue, etc.

However, in some lesions and conditions, other examinations might be needed. For instance, oral lichen planus, oral lichenoid lesions, pemphigus vulgaris and mucous membrane pemphigoid required biopsy and histopathology results to confirm the clinical diagnosis. In the case of exophytic lesions, such as pyogenic granuloma and irritation fibroma, an exicisional biopsy was performed.

Moreover, the clinical presentations among some oral lesions such as oral lichen planus, oral lichenoid contact and oral lichenoid drug lesions were clinically indistinguishable. Definitive diagnosis of these lesions had been made by considering the biopsy results, patch test, and the history of using drugs that can induce lichenoid lesions. Since all these lesions were presented with the same clinical appearance, the diagnosis of oral lichen planus/oral lichenoid lesions was used.

Referral sources

The referral sources were investigated through the referral note in the chart or from the referral letter brought by the patients.

History of biopsy

In some cases, an excisional or incisional biopsy was performed for definitive diagnosis. In immune-mediated diseases, the biopsied tissue was separated into 2 halves. One half was sent for the histopathology and the other half was sent for immunofluorescent analysis.

The number of patients who received histopathology and immunofluorescent results are reported.

Results

Patient characteristics

Out of 540 patients 410 (76.0%) were female and 130 (24%) were male patients. The distribution of patients' age is presented in Figure 1. The average age of the patients was 54±15 (ranged 20-90) years old.

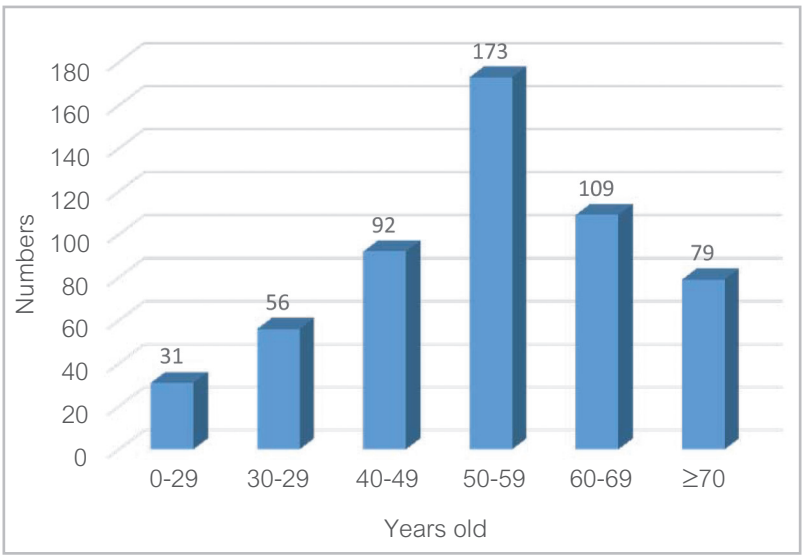

Figure 1 Age distribution of the patients

Out of 540 patients, 472 patients (87%) had only single lesion or condition. Sixty-eight patients (13%) had more than one lesions or conditions. Therefore, there were 617 lesions and conditions. The lesions and conditions can be categorized into 11 groups including; 1) white lesion, 2) orofacial pain, 3) ulcerative lesion, 4) denture related lesion, 5) infection, 6) tumor/tumor-like lesion, 7) salivary gland disease, 8) colored lesion, 9) tongue lesion, 10) bone lesion, and 11) others (Table 1).

Most common oral lesions and conditions

The distribution of the 10 most common lesions and conditions are presented in Table 2. The 4 most common lesions found were oral lichen planus/oral lichenoid lesions (37.76%), followed by burning mouth syndrome (9.07%), denture stomatitis (7.94%), and oral candidiasis (7.13%), respectively.

Table 1 Prevalence of oral lesions and conditions presented as groups.

Lesions	Prevalence (%)
White lesion	214 (34.68)
Orofacial pain	85 (13.77)
Ulcerative lesion	79 (12.80)
Denture related lesion	51 (8.26)
Infection	48 (7.77)
Tumor/tumor like lesion	47 (7.61)
Salivary gland disease	36 (5.83)
Colored lesion	19 (3.07)
Tongue lesion	13 (2.10)
Bone lesion	3 (0.48)
Others	22 (3.57)
Total	617 (100)

Table 2 Prevalence of 10 most common oral lesions and conditions.

Lesions	Prevalence (%)
Oral lichen planus/oral lichenoid lesion	196 (37.76)
Burning mouth syndrome	56 (9.07)
Denture stomatitis	49 (7.94)
Oral candidiasis	44 (7.13)
Traumatic ulcer	36 (5.83)
Irritation fibroma	32 (5.18)
Trigeminal neuralgia	18 (2.91)
Mucocele	16 (2.59)
Recurrent aphthous ulcer	14 (2.26)
Pemphigus vulgaris	14 (2.26)

Referral sources

Regarding the referral sources, there were 447 referrals and 93 patients came on their own without referral. General dental practitioners were the most common source of referrals followed by periodontists, prosthodontists, and advanced general dental practitioners (Table 3).

Table 3 Most common referral sources.

Referral source	Number of referral (%)
General dental practitioner	186 (41.06)
Periodontist	66 (14.77)
Prosthodontist	65 (14.54)
Advance general dental practitioner*	55 (12.30)
Operative dentist	26 (5.82)
Orofacial pain specialist	15 (3.36)
Physician	11 (2.46)
Others	23 (5.15)
Total	447 (100)

* Advanced general dental practitioners are the general dental practitioners who graduated higher degree in advanced general dentistry.

Biopsy data

Some patients received incisional or excisional biopsy for the establishment of a definite diagnosis. Moreover, in some immune-mediated lesions, immunofluorescent analysis was also needed. It was found that 143 (26.5%) patients received biopsy. Only histopathology was performed in 62 patients. Eighty-one patients received both histopathology and immunofluorescent analyses.

Discussion

Since oral medicine specialists are secondary source of referral, several oral lesions and conditions can be encountered by oral medicine specialists. Since it is reported that there was some delay in referral the patients to oral medicine specialists [5], recognizing the most common oral lesions and conditions which were referred should be beneficial in emphasizing dental students or general dental practitioners to be able to give appropriate care to dental patients prior to referral. In addition, if the most common source of referral is known, continuing education in particular groups of dental practitioners should also be encouraged.

In this study, it was found that approximately one third of patients were presented with either oral lichen planus or oral lichenoid contact or drug lesions. The majority of patients were elderly patients with the mean age of 54 years old. Many patients had systemic diseases, including hypertension, hyperlipidemia, diabetes, joint problems, etc. Most of them were on a lot of medications that can induce oral lichenoid lesions such as antihypertensive drugs, sulfonylurea, simvastatin, and non-steroid anti-inflammatory drugs (NSAIDs). Many patients also presented with oral lesions adjacent to dental materials. As the clinical presentation was investigated, oral lichenoid contact lesions could be presented as white striation and erythema adjacent to amalgam fillings, or full metal or porcelain fused to metal crowns or fixed partial dentures. Some of the patients who presented with such lesions were referred to the Institute of Dermatology to receive patch test and many of them had an allergic reaction to dental materials. In some cases with the diagnosis of allergic reactions to dental materials especially mercury, the replacements of metal dental materials to non-metal materials were performed. Most patients had a lot of improvement after the removal of the metal dental materials. According to the present study, it is assumed that a lot of dentists did not know how to manage oral lichen planus or oral lichenoid contact or drug lesions.

Burning mouth syndrome was the second most common condition in this study (9.07%). As stated earlier, the majority of patients were female and older than 50 years old and this condition has been reported to be found more common in menopausal women [6]. A study reported that there was a difficulty diagnosing burning mouth syndrome [7]. Many patients had delayed referrals since there was no abnormalities presented in the oral cavity, hence, patients with this symptom were investigated by several dentists. A retrospective study of patients with burning mouth syndrome seen at the Oral Medicine Clinic at Brigham and Women's Hospital (Boston, MA) was conducted [7]. One hundred and two patients (86.3% females) were included (median age 60 years). Median time from onset of symptoms to referral to the Oral Medicine Clinic was 12 months (range 4-370 months). Patients saw average of 3 dentists (range 1-7) prior to visiting Oral Medicine Clinic; 30.4% had undergone a diagnostic test; 63.7% had been given a provisional diagnosis; and 78.4% had received treatment. Patients with burning mouth syndrome experience delay in diagnosis and management despite seeking and receiving professional care. Several patients undergo unnecessary tests and tend to be misdiagnosed or receive no diagnosis at all [7]. Therefore, it is suggested that more knowledge regarding this condition should be given to dental practitioners to be able to diagnose and manage this condition properly.

The third most common oral lesion was denture stomatitis (7.94%). The most important cause of this lesion in the present study was wearing denture at night. The majority of patients stated that they did not know that the denture should be taken off at night. Most common site of this lesion was on palate. Many patients also wore broken or ill-fitting dentures and did not know that the denture should be checked, adjusted, modified or replaced at some point of time. More information regarding the maintenance of dentures should be given to dental patients in order for the patients to be able to take care of their oral hygiene after the dentures were delivered.

In comparison to previous studies, the prevalence of oral lesions reported here is different from others [1-3]. This might be due to the demographic characteristic of the subjects in this study. The majority of patients in this study were female (77%) and the most common ages of the patients were between 50-59 years old (32%). Hence, the distribution of the lesions was focused on lesions in elderly patients. Comparing this study to a previous study conducted in the northern part of Thailand and Malaysia, 234 patients (130 female and 104 male) were included [8]. The most prevalent oral lesions found were leukoedema (23.9%), traumatic ulcers (13.20%), recurrent aphthous ulcers (11.10%), and geographic tongue (5.1%). Lichen planus was found in only 3.8% of the patients [8]. A study conducted in elderly patients age older than 65 years old in Santiago, Chile, reported that the 4 most common lesions in this group of subjects were denture stomatitis (22.3%), irritative hyperplasia (9.4%), oral mucosal varicosities (9%), and solitary pigmented lesions (4%) [2]. Compared to our study, denture stomatitis was found in approximately 8%. Oral lichen planus was presented in only 2.1% of the patients. In another study conducted in Brazil, the frequency of most common oral lesions in patients treated at the Dental Specialties Center of the city of Tubarao was determined [9]. The average age of the patient was 47.2 years old. The most common 4 lesions reported were oral candidiasis (14.3%), inflammatory fibrous hyperplasia (12.6%), mucocele (9.5%), and fibroma (5.5%). Oral lichen planus, again, was found in only three out of 126 cases (2.4%) [9]. In a study conducted in the Oviedo School of Stomatology, Spain, the majority of patients were between 30-49 years old [10]. The 4 most common lesions were Fordyce's granules (50.4%), melanin pigmentation (24.6%), frictional lesions (11.5%),

and linea alba buccalis (10.1%) [10]. Lichen planus was found in only 2 out of 337 patients with prevalence of only 0.5%. Therefore, it is very interesting to know that oral lichen planus/oral lichenoid lesions were found extremely more frequent in this group of Thai patients compared to other groups of patients from elsewhere.

Regarding the referral sources, general dental practitioners were the most frequent health care professional who referred patients to oral medicine specialists (41.6%). Approximately 15% of periodontists and prosthodontists and 12.3% of advanced general dental practitioners referred patients to oral medicine specialists. A study concerning referral patterns was conducted in a hospital-based OMP clinic situated in the School of Dentistry, as part of the University of Queensland, and a private clinic located in the Central Business District in Brisbane, Australia [4]. Comparing this study to the study conducted in Australia, 71.5% of referrals in the 2 clinics in Brisbane came from general dental practitioners, 10.9% from dental specialists, and 18% from medical practitioners [4]. With regard to the referrals from dental specialists, periodontists (35%) and prosthodontists (21.7%) were the most common persons to refer these patients to OMP clinics and these results were similar to that of present study. In another study in Ireland, referral sources to Cork University Dental School and Hospital for oral medicine services was evaluated [11]. Since Cork University Dental School and Hospital is responsible for academic consultants including not only a significant teaching, research and administration, this may be different to our service in the present study which conducted in a private setting. In the 12-month period, there were 412 referrals to the oral medicine unit of Cork University Dental School and Hospital. In was found that 73.8% of referrals came from dental practitioners, with 86% of these from general practitioners, 7% from the primary care screening with the dental hospital, and a further 7% from dental specialists [11]. These studies were similar to our study in that the most common referrals were from general dental practitioners.

Often times, the definite diagnosis of oral lesions required a biopsy. In this study, 26.5% of our patients received biopsy for definitive diagnosis. Most of these lesions were red and white lesions and exophytic lesions. Some of the lesions which can be clinically diagnosed were denture stomatitis, oral candidiasis, burning mouth syndrome, and trigeminal neuralgia. These lesions do not require any biopsy for the diagnosis. A study conducted in Australia by Farah and colleagues reported that biopsy was required for 18.4% and 19.3% of hospital and private patients who received oral medicine treatment in Brisbane, respectively [4]. Other diagnostic services required were radiographs, blood test and microbiological analysis. In addition, treatment rather than biopsy were prescription, and cryotherapy [4]. In the present study we have no such data concerning other laboratory tests or treatments. Therefore, if future research is to be performed, these data may be necessary.

Conclusion

The most prevalent oral lesions referred to oral medicine specialists at the Special Clinic, Faculty of Dentistry, Mahidol University were oral lichen planus/oral lichenoid lesion (37.76%), followed by burning mouth syndrome (9.07%), denture stomatitis (7.94%), and oral candidiasis (7.13%), respectively. Regarding the referral sources, general dental practitioners (41.61%) were the most prevalent persons who referred the patients for treatment of oral mucosal lesions. The results of this study will be beneficial for the education of dental practitioners both in the dental schools and for continuing education in the future.

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