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EDITORIAL

The future of Restorative dentistry

Conservation or restoration of teeth is a powerful tool in the future of dental practice. However much is the technology advanced, the tooth lost cannot be replaced in par with the native tooth.

Restoration implies an in built potential for a life long series of repeated fillings. But with widespread availability of fluoride at present, the possibility of remineralization and the potential of fissure sealant as therapeutic option should be considered when there is questionable caries in a fissure (Elderton, 1985). Most preventive measures need time to demonstrate their effect. Therefore their use should be coupled with noninvasive approach at treatment planning.

It has been gradually realized that performing an avoidable restorative treatment is harmful since any filling undertaken now will involve larger replacement at a later date.

What is the impact of this approach in training undergraduates. How an undergraduate student achieve competence in restoration (e.g. amalgam) when opportunities to gain clinical experience appear to be dwindling partly because of changes in current practice of dentistry and also the disease pattern.

Conservation or Restoration of teeth is an important factor in the future of Dental Practice. Even with all the Technology Advancement in the feild of the Dentistry a tooth lost, is lost for ever as replacement, would never be the same.

But changing the focus of restorative dentistry to preventive and maintenance therapy the students will gain experiences that provide foundation for future decisions. Stimulation of students to replacement for the sake of gaining experience should be discouraged. Credit must be given for maintenance restoration either through refinishing or repair procedure. As

Loesche stated, we must move “ from being a healer to being a preserver.”

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Ganananda Nanayakkara
Editor (SLDJ)

SEVERE ACUTE RESPIRATORY SYNDROME (SARS) AND DENTISTRY: A REVIEW

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Introduction

Severe Acute Respiratory Syndrome (SARS) could be considered the first severe, readily transmissible infectious disease with devastating consequences that emerged in the twenty first century. The World health Organization has estimated that the economic cost of the disease in the region of US\$ 30 billion in Far-East alone. Fortunately however, up until now, not a single dental care worker has been instrumental in transmitting SARS or documented to have contracted the disease through a dental clinic/office setting. This is thought to be due to the rigorous universal infection control measures the dental community is currently practicing as well as the acute febrile nature of the initial phase of the disease which obviates SARS patients visiting the dentist, for routine dentistry. Although the outbreak has abated there are lessons that could the dental community could learn. The aim of this article, therefore, is to provide basic data on the disease and its transmission, and draw attention to infection control measures that need to be reviewed in the context of a dental surgery setting.

The outbreak

No one knows with certainty how, where and when SARS manifested in humans – though it is generally believed that the first few cases may have originated in the fall of 2002 in the Guangdong province of Southern China. For decades, the Guangdong province had a very large concentration of humans, pigs and fowl living in close proximity due to mixed farming traditions that date back centuries. This region also has the dubious distinction of being the deadly source of the Asian flu, caused by the H2N2 virus, which killed about one million people worldwide in 1957-58. More recently, in 1997 the Avian flu (bird flu) due to H5N1 that killed six individuals also originated from the Guangdong province.

The worldwide spread of SARS, in the spring of this year was precipitated when an infected chest physician from Guangdong province transmitted the infection to multiple, resident guests at a Hong Kong hotel where he stayed for a few days prior to succumbing to the disease. These guests, acting as virtual vectors of the disease, initiated outbreaks in Canada, Vietnam and Singapore when they returned

home after their trip to Hong Kong. The rest of the disease transmission is now well-documented history.

The SARS outbreak has been recognized in over 30 countries in all five continents, and more than 3000 people afflicted predominantly in Asia, especially in China with, mini-outbreaks in North America, and a few cases in Europe. The case clusters were especially common amongst close associates of patients and, health care workers who treated them and their household contacts.

A distressing attribute of SARS is the disproportionate numbers of health care workers that were affected by the disease as in some countries up to one quarter infected belong to this group.

Patient characteristics

Most patients identified with SARS have been previously healthy adults aged 25-70 years. A few cases of SARS have been reported among children (<15 years) where the clinical course is now thought to be less aggressive. A summary of the major clinical characteristics of SARS patients is provided below although the information should be considered preliminary because of the broad and non-specific case definition.

Clinical features

The incubation period of SARS is generally considered to be 2-7 days but occasionally may last up to 10 days. Symptomatically, the illness appears to have two phases the early, prodromal

febrile phase and secondary lower respiratory phase. In pathologic terms however it is a triphasic disease with a primary viral replicative phase, a secondary immune hyperactive phase and finally a pulmonary destruction phase. The disease generally begins with a prodrome of usually high fever (>38°C), that may be accompanied by chills and rigors. Headache, malaise, and myalgia are also common. At the onset of illness, some cases have mild respiratory symptoms. In a few the febrile prodrome may be accompanied by diarrhea although, rash and neurologic or gastrointestinal findings are absent.

After 3-7 days, the second lower respiratory phase ensues with a dry, non-productive cough or dyspnea that may be accompanied by or progress to hypoxemia. In up to one fifth of the cases, the respiratory illness is severe enough to require intubation and mechanical ventilation.

The case fatality among persons with illness meeting the current WHO case definition for probable and suspected cases of SARS is variable and range from 3-10 per cent depending on the age group and possibly other yet unconfirmed factors. Further, the mortality is higher amongst those with underlying illnesses and the very elderly.

Usually the chest radiographs appear normal during the febrile prodrome and throughout the course of illness in some. However, in a majority, the respiratory phase is characterized by early focal infiltrates progressing to more generalized, patchy, interstitial infiltrates, sometimes leading to consolidation in the very late stages.

In general, in the early phase of the disease, the blood picture may show either a normal or decreased white cell count with a reduction in the absolute lymphocyte count. At the peak of the lower respiratory phase, up to one half of patients exhibit leukopenia and thrombocytopenia or low-normal platelet counts (50,000 – 150,000 / μ l). Renal function appear to remain normal in the vast majority of patients.

Management and prevention

A number of treatment regimens have been explored for SARS. These include a variety of antibiotics to presumptively treat known bacterial agents of atypical pneumonia and antiviral agents such as oseltamivir or ribavirin. Steroids have also been given in combination with these antimicrobial agents. However the most beneficial regime remains to be determined. Follow up of recovered SARS patients have indicated that a significant proportion suffer from bone diseases possibly as result of steroid therapy. Until reliable diagnostic tests, an effective vaccine and anti-viral drugs are available control of an epidemic depends on early identification of suspect and probable cases, their quarantine (including closes contacts) and effective infection control measures especially after they are admitted to a health care facility.

The viral aetiology

It is now confirmed that a new strain of a virus belonging to the family Coronaviridae is the agent of the disease. Historically coronaviruses are known to cause common cold and upper respiratory tract infections that may sometimes lead to

pneumonia in humans. The coronaviruses, so named for the crown of spikes they carry on their surface, attracted the interest of researchers when they noted that it rapidly infected cells in culture, a phenomenon not common amongst other human coronaviruses. The new virus infecting the cultured cells was given the term SARS coronavirus (SARS-CoV) (Fig 2). Further, antibodies to the SARS-CoV were found almost exclusively in patients with SARS during convalescence but not in human serum samples from healthy patients or those banked before the outbreak, suggesting that the infection is new to humans. Although other candidate organisms such a paramyxovirus and, chlamydia have been implicated in the disease process, but the consensus is that they play a little role in the SARS pathogenesis, if any.

The confirmatory evidence that a coronavirus is the etiologic agent comes from serological techniques demonstrating rise in antibody titre, growth in tissue culture, and determination of reverse-transcriptase PCR specific for this virus using molecular genetic techniques and finally animal studies. The latter studies have helped satisfy Koch's postulates, necessary to prove disease causation.

Virus infectivity and survival

The rapid spread of SARS worldwide within a few months implies the highly contagious nature of the disease. The infectivity during the incubation period is still unclear and it appears that the risk of transmission during the prodrome is low. In contrast coronaviruses that cause common cold, the viral

shedding period usually precedes the onset of clinical symptoms by one to two days although the peak viral excretion occurs during the symptomatic phase. Also the infectivity during convalescence appears to be low and, remains to be determined.

There is some data on the survival and infectivity of the SARS coronavirus indicating that, unlike other coronaviruses, it is a rather robust organism that is stable in faeces (and urine) at room temperature for at least 1-2 days. It is more stable (up to 4 days) in stool from diarrhea patients (which has higher pH than normal stool). Unpublished studies of ours also indicate that Sars-CoV survive for more than a day in either human mixed or, parotid saliva. However the virus loses infectivity 5 minutes after exposure to commonly used disinfectants and fixatives including 10% formaldehyde, 10% hypochlorite, 75% ethanol and 2% phenol. Heat at 56°C kills the SARS coronavirus at around 10000 units per 15 min (quick reduction).

Mode of spread

The primary means of SARS spread appears to be close person-to-person contact. Most cases of SARS have involved people who cared for or lived with someone with SARS, or had direct contact with infectious material (e.g. respiratory secretions) from a person who has SARS. Other potential ways in which SARS can spread include touching objects (fomites) that are contaminated with infectious droplets and then touching the eye(s), nose, or mouth. Hence the importance of good personal hygiene and surface decontamination or

disinfection. Airborne spread of the disease has not been ruled out.

Infection control measures

How should the dental community respond and modify their clinical practice in the face of a SARS outbreak? This was a vexing question during the early stages of the outbreak when much was not known of the aetiological agent or the disease process. However, the scientific community worldwide has responded magnificently and, now we have many solutions for prevention of its spread including procedures that could be adopted in the event of its return. The following is an outline of such guidelines.

Identification of SARS patients

All dental professionals should know how to identify a suspected case of SARS. The current interim diagnostic criteria for SARS are shown in Table 1. These are subjected to change as more is learnt about the disease and should be reviewed periodically by visiting either the American or British Dental Association or the Centers for Disease Control and Prevention websites.

Patient evaluation

As usual a thorough medical history should be taken from each patient and updated at each recall visit. The questionnaire used for this purpose may have to be modified in light of SARS and incorporate targeted SARS screening questions. Although these questions (see below) appear superfluous during the current abeyance of the outbreak, they are

noteworthy as a guide for a future similar outbreak of SARS. These additional questions may include:

1. Do you have fever?
2. Do you have a recent onset of a respiratory problem like cough or difficulty breathing?
3. Have you within the last 10 days (i.e. the incubation period of SARS) had international travel or visited an area where documented or suspected community transmission of SARS is occurring.

In the event, if the patient has returned from a geographic region with documented or suspected community transmission of SARS is occurring then elective dental treatment could be deferred until this period is over and emergency treatment, if necessary, provided with routine barrier precautions, avoiding spatter or aerosol generating procedures. This treatment should only be limited to the control of pain and infection. Suspected SARS patients should never be treated in the dental office. If a patient replies in the affirmative to screening questions one and two, then wear a surgical mask, discuss the potential concerns with the patient, call the area medical facility and inform them that you are referring a suspect SARS patient so that arrangements can be made for care and transport of the patient. SARS patients need ground emergency medical services.

These screening questions should be routinely asked from all patients, as questioning only a select group of patients, for whatever reason, may undermine early detection of infection and might also be construed as discriminatory practice. Treatment for convalescent patients should be

delayed for at least one month after which they can be treated under standard precautions.

Pre procedural mouth rinse

A pre-procedural antimicrobial mouth rinse (with 0.12-0.2 per cent chlorhexidine gluconate) is considered to reduce the number of microbes that are released into the to the operatory environment. There is however no concrete data yet to indicate that a pre-procedural mouth rinse reduces infection amongst dental health care workers or patients. Pre-procedural rinse would be most useful in selective situations where rubber dam can not be used such as when a prophylaxis cup or an ultrasonic scalar is employed, in the absence of assisted, high-volume suction.

Hand hygiene

The single most important method of preventing transmission of any infectious agent including the SARS coronavirus is hand washing and appropriate hand care. Appropriate hand hygiene is the mainstay of a good dental infection control programme. Further, the recent data indicate that the SARS virus, compared with other coronaviruses is a relatively robust organism and, may survive on non-porous surfaces up to 48 hrs. This implies the stress that should be placed on hand hygiene as well as the importance of thorough surface disinfection.

The hand hygiene methods used in dentistry vary depending on the type of procedure, the anticipated degree of contamination and the desired degree of persistence of antimicrobial action on the skin. For routine dentistry, which entails examinations and

non-surgical procedures, plain soap or water, is adequate. Recently the CDC has recommended that if the hands are not visibly soiled, an alcohol-based hand rub could be used for routine decontamination as this is as effective as hand washing and also saves time.

Rubber Dam Isolation

Rubber dam is a useful procedure to minimize saliva/blood contaminated aerosol or spatter production. Upto 70 per cent reduction in airborne particles around a 3 feet diameter of the routine clinical work-interphase has been shown in when rubber dam is used. Split-dam technique may be used in situations where gingival areas are involved in situations such as Class V restorations and crown and bridge preparations.

As far as possible aerosol generating procedures should be avoided if rubber dam isolation is not feasible. These procedures include, ultrasonic scaling and root surface debridement, high or low-speed drilling with water spray

Personal protective equipment

Personal protective equipment (PPE) available for dental care workers are designed to protect the skin and the mucous membranes of the eye, nose and mouth from exposure to potentially infectious material. Experience with the SARS coronavirus in hospital settings has shown that health care

workers acquired their infections either due to the inadequacy of the barrier protection methods that were employed or the improper use of these methods. These barrier equipment comprise protective eyewear, masks, gloves face shields and protective over wear.

Masks

The face mask forms a barrier protection that essentially shields the face and the nasal mucosa when droplet and aerosol spread is anticipated. Droplet transmission occurs when large particle droplets, greater than 5 um from an infectious person makes contact with the mucosa of the conjunctiva, nose or the mouth of a susceptible person. These droplets, as opposed to larger droplets (> 5 um in size) may be airborne and travel short distances of up to one meter (3 feet). Alternatively, they may be transmitted by close contact with the source individual. In general such droplets are generated in the dental office environment during (but not exclusively) scaling (manual or ultrasonic) and, high speed instrumentation particularly when the working-end of the instrument comes into contact with pooled saliva and, polishing and cleaning of instruments

Such transmission of infection, of course depends on factors such as the virulence of the organism

transmitted and the dose or the quantity of organism transmitted. In the case of the coronavirus pneumonia leading to SARS, airborne droplet transmission of infection is considered to be the main route of spread.

Various types of masks and face shields are available. Surgical masks usually provide adequate protection in dental care settings where highly infectious diseases are not encountered. It should be noted that surgical masks are not designed to p due to the difficulty in breathing through a thick impervious fabric and, are expensive. Hence N-95 masks are not recommended for routine dental office settings in SARS-free periods

As face masks do not provide a perfect shield around their edges inhaled air may pass through the edges without filtration. Therefore, the selected mask should fit the face well to minimize the passage of unfiltered air. A mask when wet should always be removed as it loses its efficacy due to the resistance to the airflow through the moist material, leading to passage of further unfiltered air through the edges. Hence a surgical mask and protective eyewear are adequate for routine dental treatment where splatter and splashes are minimal. Perhaps the addition of a face shield may be an additional option if more protection is required, especially during a SARS period.

There are certain basic precautions that should be adopted when a surgical mask is worn. It is essential that the mask fit snugly over the face. Once worn, the exterior surface of the mask should not be touched. Similarly, avoid contacting the exterior surface during the removal of mask. After taking off the mask, it should be folded outwards (i.e. the outside of the mask facing inwards), and disposed in an appropriate container. Masks should always

be discarded when moist, due to the attendant loss of their filtration and barrier efficacy.

Protective eyewear

Protective eyewear such as goggles is adequate where small amounts of spatter or splashes are likely. This may be supplemented with a face shield when more protection is required. Supine patients eyes must always be protected during treatment.

Ventilation

High volume evacuators/suction should be at all times when using high-speed hand piece, water spray or ultrasonic scaler as otherwise these maneuvers necessarily create aerosols. In addition clinical areas should always have positive ventilation drawn through an appropriate filter system in order to prevent recirculation of contaminated air.

The future

Globally, no new cases of SARS have been reported since 15 June 2003 and the WHO has lifted all its travel advisories worldwide. It is possible that the disease may return in the winter as in the case of many coronavirus infections. If SARS does return then its epidemiology could be different as there are many unanswered questions. There are many who are currently working on an effective vaccine for SARS and first generation vaccine trials on animals are underway. If these trials are promising, then it is likely that a vaccine for humans will be available within the next 12 months or so. In the event, dental professionals in the SARS endemic areas will be compelled to take this vaccine on top of other routine vaccines which they are obliged to take to protect themselves as well as the patients they treat.

Table 1: **Updated Interim U.S. Case Definition for Severe Acute Respiratory Syndrome (SARS)**

Clinical Criteria

- Asymptomatic or mild respiratory illness.
- Moderate respiratory illness
 - Temperature of >100.4°F (>38°C), and
 - One or more clinical findings of respiratory illness (e.g., cough, shortness of breath, difficulty breathing, or hypoxia).
- Severe respiratory illness
 - Temperature of >100.4°F (>38°C), and
 - One or more clinical findings of respiratory illness (e.g., cough, shortness of breath, difficulty breathing, or hypoxia), and
 - radiographic evidence of pneumonia, or
 - respiratory distress syndrome, or
 - autopsy findings consistent with pneumonia or respiratory distress syndrome without an identifiable cause.

Epidemiologic Criteria

- Travel (including transit in an airport) within 10 days of onset of symptoms to an area with current or previously documented or suspected community transmission of SARS, or
- Close contact within 10 days of onset of symptoms with a person known or suspected to have SARS.

Laboratory Criteria

- Confirmed
 - Detection of antibody to SARS-associated coronavirus (SARS-CoV) in a serum sample, or
 - Detection of SARS-CoV RNA by RT-PCR confirmed by a

second PCR assay, by using a second aliquot of the specimen and a different set of PCR primers, or

- Isolation of SARS-CoV.
- Negative
 - Absence of antibody to SARS-CoV in a convalescent-phase serum sample obtained >28 days symptom onset
- Undetermined
 - Laboratory testing either not performed or incomplete

Case Classification

- **Probable case:** meets the clinical criteria for severe respiratory illness of unknown etiology and epidemiologic criteria for exposure; laboratory criteria confirmed or undetermined.
- **Suspect case:** meets the clinical criteria for moderate respiratory illness of unknown etiology, and epidemiologic criteria for exposure; laboratory criteria confirmed or undetermined.

Exclusion Criteria

A case may be excluded as a suspect or probable SARS case if:

- An alternative diagnosis can fully explain the illness
- The case has a convalescent-phase serum sample (i.e., obtained >28 days after symptom onset) for which is negative for antibody to SARS-CoV.
- The case was reported on the basis of contact with an index case that was subsequently excluded as a case of SARS, provided other possible epidemiologic exposure criteria are not present.

PATIENT SATISFACTION WITH DENTAL CARE

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Abstract:

Objective: The objective of the study was to assess the level of satisfaction with restorative care provided at the Dental Institute, Colombo.

Method and methods: The sample consisted of a total of 450 patients, of which 225 each had been given appointments for restorations and endodontic treatment. Data were collected by means of a pre-tested questionnaire. The questionnaire was distributed to the selected patients prior to them obtaining treatment. The patients were asked to return the questionnaires by post.

Results: 274 patients had returned the questionnaire giving an overall response rate of 62%. Of the 274, 150 and 124 had been given appointments for endodontics and restorations respectively. Patient satisfaction with the location of the hospital differed significantly between the two treatment groups. The majority in both groups was not satisfied with the waiting time to get an appointment (68-76%) as well as with the waiting time to see the dentist (47-60%). But over 90% were satisfied with the competency of the dentist and with the time taken for providing treatment

(75-81%). Over 75% had disagreed with the statement “adequate physical facilities are available for patients”. Compared to respondents in the endodontic group (12%), most of the respondents in the restorations group (34%) had disagreed with the statement “ancillary staff is kind and courteous”.

Conclusions: Patients seeking restorative dental care at the Dental Institute were generally satisfied with the care provided.

Introduction:

Assessment of quality is an integral part of the overall evaluation of health care delivery systems. Due to the increasing influence of the market economy in the delivery of health care, providers of health care in recent times have shown interest in ascertaining the views and perceptions of patients who are the consumers of health care. Measuring patient satisfaction with health care is therefore considered as an important indicator of quality of care. In fact van Campen et al.¹ considered patient satisfaction as an indicator of quality of care from a patient's perspective.

Moreover, assessment of patient satisfaction is also important in understanding both patient compliance² and dental utilization behaviours³.

Patient satisfaction is a complex phenomenon and influenced by characteristics of the dental utilizer as well as factors associated with the health care delivery system. According to Reifel et al⁴, socio-demographic factors, oral health beliefs, oral health behaviours and oral needs of the dental service utilizer influence patient satisfaction with dental care. Having reviewed the literature on patient satisfaction with dental care, Newsome and Wright⁵ concluded that five issues connected with the health care delivery system affect patient satisfaction with dental care. They are technical competence, interpersonal factors, convenience, cost and facilities.

Although assessment of patient satisfaction has been accepted as an important aspect of evaluation of oral health, a few studies have been conducted on this subject in Sri Lanka. Patient satisfaction with dental care provided at the Dental Institute, Colombo is yet to be evaluated. Therefore the aim of the present study was to assess the level of patient satisfaction with restorative dental care provided at the outpatients department of the Dental Institute, Colombo.

Method and materials:

The present study was carried out at the Dental Institute in Colombo. The study population consisted of patients who were over the age of 18 years and had been given appointments for

the provision of endodontic treatment and permanent restorations at the out- patients department of this institution.

For the purpose of calculating the sample size, the proportion of patients who were satisfied with the care received was considered to be 50%. Accordingly the minimum sample size required for the present study in relation to a prevalence estimate of 50% at 95% level of confidence and accepting a sampling error of 5% was 384. This was increased by 10% to allow for non-respondents that gave a total sample of 422. However, for practical purposes the final sample size considered was 450 of which 225 each had been given appointments for of endodontic treatment and permanent restorations. A simple random sampling technique was used to select the sample. About 20 patients each who had been given appointments for permanent restorations and endodontic treatment on a particular day were selected randomly from the daily appointment registers maintained by the clinic. If a patient who had been selected for inclusion in the sample had not attended the clinic on that day, refused to participate in the study or had been interviewed on a previous occasion, the subject immediately next to that particular patient in the appointment register was considered.

Data were collected by means of a self-administered questionnaire. The questionnaire consisted of 24 questions and was pre-tested among 10 patients attending the Dental Institute. Certain questions had to be modified for

purpose of better clarity. Apart from the basic socio-demographic information, the questionnaire included 13 questions to assess the patient's satisfaction with respect to factors related to convenience of obtaining care such as location, waiting time, duration between first and subsequent visits, interpersonal factors and about facilities available in the hospital and clinics. The patients were instructed to indicate their responses on a 3-point scale: satisfied, dissatisfied and cannot comment for 5 questions and agree, disagree and cannot comment for 8 questions. The questionnaire was handed over to the patient prior to commencement of treatment along with a postage paid return envelope. Having informed about the purpose of the study, they were assured of absolute confidentiality with respect to the information provided and their co-operation was sought. They were requested to return the questionnaire within a week of distribution. Those who were unable to read or write were asked to seek help from a family member. Permission was obtained from the dental surgeon in charge to conduct the study.

Data analysis was carried out using the SPSS statistical software.

Results:

Of the 450 patients who were given the questionnaires, 274 responded giving an overall response rate of 61%. Of the 274 respondents, 150 and 124 had been given appointments for endodontic treatment and permanent restorations respectively. The majority of patients in both

groups belonged to the 18-24 year old age group. There was a female preponderance in both groups. Eighty one percent of the total sample had been educated up to the GCE (ordinary level) (Table 1).

Patient satisfaction with the location of the hospital differed significantly between the two treatment groups. Only 79% were satisfied with the location in the endodontic group compared to 84% in the restorations group. The majority in both groups was not satisfied with the waiting time to get an appointment (68-76%) as well as with the waiting time to see the dentist (47-60%). But over 90% were satisfied with the competency of the dentist and with the time taken for providing treatment (75-81%)(Table 2).

The responses to the 8 statements where the patients were asked to indicate whether they agree/disagree or no comment are shown in Table 3. Over 75% had disagreed with the statement "adequate physical facilities are available for patients". A high percentage (43-45%) had not commented to the statement "high quality equipment and instruments are used". Compared to respondents in the endodontic group (12%), most of the respondents in the restorations group (34%) had disagreed with the statement "ancillary staff is kind and courteous" and the difference between groups was statistically significant. With respect to the responses given to the two statements "quality of treatment is better than private sector" and "dentists are kind and courteous", there were statistically significant differences between the two groups.

Discussion;

The response rate was 62% and could be considered as acceptable for a postal survey. It may have been possible to increase the response rate if the data were collected by means of an interviewer-administered questionnaire instead of a postal questionnaire. However, this was not attempted, as there is a possibility that patients would not give a critical and unbiased opinion of what they really feel about the health care institution when they are interviewed in the same setting for the fear of incurring displeasure of the health care providers.

Overall, the patients had generally expressed their satisfaction with the care they received at the Dental Institute. Of the 13 items that were used to assess patient satisfaction, the highest positive rating was given to the item, which assessed the competence of the dentist. Nearly 92% had expressed their satisfaction with respect to this item. This confirms with the findings of Williams and Calnan⁶ who have shown that professional competence is a key predictor of consumer satisfaction with dental care. However, Williams⁷ has stated that patients in general have difficulty in evaluating the technical aspects of care and competence, and therefore they base their judgements on factors such as confidence of the care providers rather than on technical evaluation of quality and competence. Of those who were not satisfied with the competence of the dentist, the majority had stated “experience of pain during treatment” as the main reason for expressing dissatisfaction. In his study, Wimalaratne⁸ too had reported a similar finding. In fact pain

management by the dentist is one important factor that influences consumer satisfaction with dental care⁹. Over 75% of the respondents of this study were satisfied with the time taken for treatment. However, “long treatment span” was cited as the main reason for dissatisfaction with dental care provided at a dental faculty in Turkey¹⁰. A plausible explanation for this difference may be that the care providers in the present study were experienced dentists whereas in the Turkish study they were dental interns. The percentage of respondents who were dissatisfied with the location of the Dental Institute was higher in the endodontic group than those in the restorations group. Compared to the restorations group where nearly 60% were living within <15 km radius from the hospital, a significantly higher percentage of respondents in the endodontic group (68%) had traveled from places which were over 15km away from the hospital. This may therefore indicate the influence of the distance to be traveled on the respondents’ satisfaction with the location of the institution.

With respect to certain aspects of the service the respondents had expressed their dissatisfaction. For example, the majority was dissatisfied with the waiting time for appointments and the waiting time to see the dentist. In the endodontic group, 65% of the respondents had stated that they had to wait over 3 months to get an appointment and 23% had stated that the waiting time to see the dentist was 3 hours or more. Other workers have also reported that patients seeking dental care at public sector health care institutions were dissatisfied with the long waiting time for

appointments as well as long waiting time to see the dentist¹⁰⁻¹³. This is a common problem encountered by patients seeking care at public sector health care institutions. Due the large numbers demanding care and financial constraints to increase resources, it may sometimes be very difficult to shorten the waiting time for appointments. However, the waiting time to see the dentist at the Dental Institute could be shortened if the appointments are given on a staggered basis rather than asking all patients to attend the clinics at the beginning of the morning (8 am) or afternoon session (2 pm) as it is at present. Compared to respondents in the endodontic group, most of the respondents in the restorations group had disagreed with the statement "ancillary staff is kind and courteous". In other words they were dissatisfied with the ancillary staff of the clinics. This may be attributed to the difference in the type of ancillary staff employed in the two clinics. In endodontic clinics the ancillary staff consists of nurses whereas the ancillary staff of other clinics are labourers who may have no appreciation of the need for good interpersonal relationships with patients. Another aspect that the patients expressed their dissatisfaction was with respect to the physical facilities provided for patients. Many respondents have stated that sitting arrangements, cafeteria and toilet facilities were grossly inadequate for the large numbers demanding care.

In conclusion the present study revealed that patients seeking restorative dental care at the Dental Institute were generally satisfied with the care provided. It was also possible to identify

certain shortcomings that need to be improved in order to provide an efficient service to the consumer.

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Table1 Characteristics of the sample according to treatment group

	Treatment group					
	Endodontics (N=150)		Restorations (N=124)		Total (N=274)	
	n	%	n	%	n	%
Age (years)						
18-24	62	41	46	37	108	39
25-34	56	37	36	29	92	34
>34	32	21	42	34	74	27
Gender						
Male	66	44	46	37	112	41
	84	56	78	63	162	59
Level of education						
Up to year 5	14	9	0	0	14	5
>5 - GCE(AL)	118	79	104	84	222	81
Degree/diploma	18	12	20	16	38	14
Distance from residence to Dental Institute(km)						
≤15	48	32	74	60	122	45
>15	102	68	50	40	152	55

Patient satisfaction with dental care

Table 2 Percentage distribution of responses to items coded, as satisfied/not satisfied/ cannot comment according to treatment group (endodontic group n=150, restorations group n=124)

	Group	satisfied	not satisfied	cannot comment
Convenience				
With the location of the hospital*	endodontics	79	13	8
	restorations	84	3	13
Waiting time to get an appointment	endodontics	16	76	8
	restorations	16	68	16
Waiting time in the clinic to see dentist	endodontics	29	60	11
	restorations	42	47	11
Time taken for providing treatment	endodontics	75	11	14
	restorations	81	10	9
Interpersonal				
Competence of the dentist	endodontics	91	2	7
	restorations	92	8	0

The difference between treatment groups significant at *P<0.01

Table 3 Percentage distribution of responses to statements coded, as agree/disagree/ no comment according to treatment group (endodontic group n=150, restorations group n=124)

	Group	satisfied	not satisfied	cannot comment
Facilities				
“Clinics are kept clean and tidy”	endodontics	62	19	19
	restorations	69	10	21
“Sterilized instruments are used for treatment”	endodontics	59	11	30
	restorations	61	13	26
“Quality of treatment better than in private sector”*	endodontics	59	4	37
	restorations	48	13	39
“High quality equipment and instruments are used”	endodontics	45	12	43
	restorations	36	19	45
“Adequate physical facilities are available for patients”	endodontics	3	83	14
	restorations	7	77	16
Interpersonal				
“Dentists are kind and courteous”***	endodontics	85	6	9
	restorations	71	5	24
“Ancillary staff is kind and courteous**	endodontics	61	12	27
	restorations	29	34	37
Convenience				
“Can obtain any type of restorative care	endodontics	27	48	25
	restorations	27	46	27

Difference between treatment groups significant at P<0.05* ; P<0.01**

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PATTERN OF RECURRENCE OF AMELOBLASTOMA IN SRI LANKA

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Abstract

Ameloblastoma is a benign but locally aggressive tumour. It is known to recur following treatment in some patients. 136 cases of ameloblastomas were selected from the archives of the Department of Oral Pathology, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka, spanning a period of just over 8 years. These cases were analysed according to the histological type, site, age, sex and treatment modality. 38 cases were found to have recurred (26.8%). Higher recurrence rate was observed in maxilla (43%) compared to the mandible (36.72%). The highest incidence was found to be in the 4th and 5th decades of life ($p < 0.05$). There was no significant difference between males and females in the incidence of ameloblastoma. The pattern of recurrence according to the histological type was significant ($p < 0.05$). 60% of the recurrent unicystic ameloblastoma is of mural subtype ($p < 0.01$). Cases treated by conservative surgery had more

incidence of recurrence compared with the cases treated with radical resections. Ameloblastoma appeared to have a significantly higher recurrence rate according to the present study. Treatment modality may also be responsible for the rate of recurrence. The histological type of ameloblastoma could be considered as an important factor in the treatment planning.

Key words

Ameloblastoma, Recurrence, Mural subtype

Introduction

Ameloblastoma is a benign but locally aggressive neoplasm derived from the odontogenic epithelium. It grows slowly and persistently. Both sexes are equally affected. The tumor is relatively uncommon and it accounts for approximately 1% of all oral tumours. Although ameloblastoma is rare in childhood, it could occur in all age groups. Nevertheless, it commonly occurs in the third and fourth decades of life. This tumour is common in

the mandible with figures as high as 95.7% reported in the past⁵. Although ameloblastoma is a benign tumour a few cases with malignant transformation and distant metastasis have been reported.³ According to the histological features, ameloblastomas can be classified into three types, namely conventional type, unicystic and peripheral type which is known to be a rare type. There are numerous sub groups within these types. Treatment of ameloblastoma can be divided into conservative and radical approaches. The conservative approach includes enucleation and curettage. The radical approach includes resection, which can be either segmental or marginal mandibulectomy. It is usually subtotal in the case of mandible and total maxillectomy in the case of maxilla¹². Recurrence of ameloblastoma is a well known phenomenon. Time span before recurrences varies largely and there are reported cases of recurrence after 21 years¹⁵ and 49 years.⁶ Pattern of recurrence varies with the histological type as well. Unicystic type is known to have a low recurrence rate⁸. Recurrence rate of ameloblastoma is about 8.9% and most of the recurrences are in the mandible¹³. The highest incidence was found in the third decade of life¹³.

Most of the recurrences presented within 5 years of primary surgery¹³. The present study aims to assess the pattern of recurrence of ameloblastoma in Sri Lanka with regard to age, sex, site, histological type and treatment modality.

Materials and Methods

All histopathological specimens received by the Department of Oral Pathology, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka between January 1993 to March 2001 were reviewed. All cases originally diagnosed as ameloblastoma were retrieved. The cases were classified into various histological groups and subgroups according to the criteria described by Robinson & Martinez (1977), and Gardner (1981). Medical records of all 136 cases reported were retrieved and analysed for age, sex, and anatomical location of the lesion and treatment methods. Follow-up details were collected from Oral and Maxillofacial units of the entire country. As the department of Oral Pathology, Faculty of Dental Sciences is the only referral centre for Oral Pathology in Sri Lanka, the cases reported in this department are a good representation of the entire country.

Results

Histological types

During the 8-year period of study, there were 136 cases of ameloblastoma out of which 38 cases were recurrences (26.8%). There were 90 cases of conventional ameloblastoma (66.2% of all the cases) out of which 26 (28.8%) had a history of recurrence. 45 cases of unicystic ameloblastoma were reported during this period and 11 (24.5%) of them have had recurrence. There was only a single case of peripheral ameloblastoma, which showed recurrence. In the conventional type of ameloblastoma, 57 cases were of follicular type out of which 21 (36.8%) were recurrences.

Although there were 29 cases of plexiform type, only five of them (17.3%) showed recurrence. In the follicular type of ameloblastoma, several subtypes were observed. Follicular subtypes included 40 cases out of which 14 (35%) have had recurrence. Five out of 13 cases of acanthomatous subgroup in which squamous metaplasia could be observed had recurrences (38.4%). There were only 3 granular cell subtype and one desmoplastic subtype during this period and 2 of the 3 granular cell subtype had recurrences. The pattern of recurrence according to the histological type was statistically significant. ($P < 0.05$ as tested by chi-squared test).



Fig.1 Unicystic ameloblastoma
(Luminal type) H&E x200

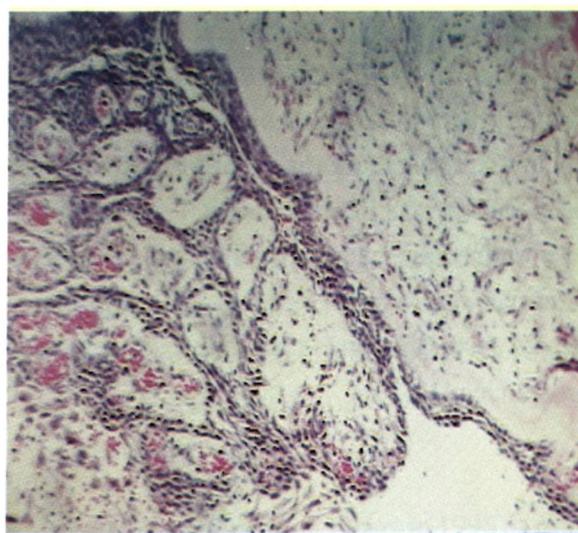


Fig.2 Unicystic ameloblastoma
(Intra luminal type) H&E x100

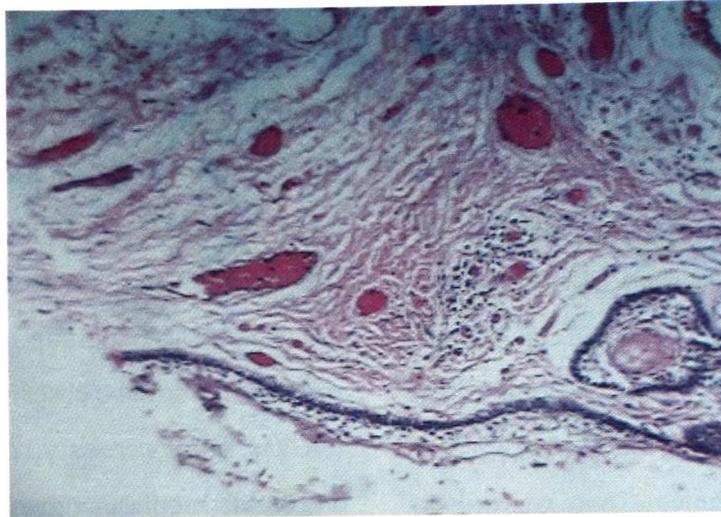


Fig.3 Unicyclic ameloblastoma (mural type) H&E x100

Unicyclic ameloblastomas were classified into three histological subtypes. In luminal subtype (fig.1), neoplastic epithelium is confined to the cystic epithelium, whereas in the intra luminal type (Fig.2) it extends in to the lumen. In mural type (Fig.3) it extends to the connective tissue wall. In this study there were 11 cases of intra luminal type of unicyclic ameloblastoma out of which two cases had recurrence (18.2%). 6 out of 10 cases of mural type had recurrence and that represents a recurrence rate of 60% ($P < 0.01$). Although there were 24 cases of luminal type, only 3 of them had recurrences (12.5%).

Site

94% of the cases occurred in the mandible. There were 34 recurrent cases in the mandible, which means 89.5% of recurrences were in the lower jaw. Out of those 34 cases, 21 were in the anterior

region and 5 of them showed recurrence (23.8%). Three out of 10 cases in the mandibular premolar region showed recurrence and it represented a recurrence rate of 30%. Although there were 97 cases of ameloblastoma in the mandibular posterior segment, only 26 of them showed recurrences (26.8%). Three (3) out of 7 cases occurring in the maxilla had recurrences (43%). The single case that occurred in the soft tissues appeared to have a recurrence.

Sex

There were 66 males and 70 females. 19 recurrent cases were in males and 19 were in females. Therefore, the male to female ratio of recurrence was 1:1.

Age

The age range of the patients with recurrence of ameloblastoma varied significantly, from 14 years to 67 years. Mean age of recurrence was 38.9 years. A recurrence rate of 16.1% (5 out of 31 cases) was found in 11-20 year age group and for 21-30 year age group it was 21.9%. Ten (10) out of 35 cases in the fourth decade had recurrences (28.6%) and in the 5th decade it was as high as 31.8% (7 out of 22). Five recurrent cases were seen in the sixth decade (55.55%) and there were four cases in the seventh decade (80%). These findings showed a statistically significant result ($P < 0.05$).

Treatment modality

Out of the 38 recurrent cases studied, clinical records were not available in five cases. 92.3% of the cases were treated by conservative measures. 7.7% cases were treated by other methods including resection, which can be either segmental or marginal mandibulectomy or sub total or total maxillectomy. The conservative approach includes curettage and enucleation.

Discussion

In the present investigation, 38 out of 136 cases of ameloblastoma were recurrences and it represents a recurrence rate of 28%. According to Olaitan & others, recurrence rate of ameloblastoma is only 8.9%. Follicular ameloblastomas have a very high incidence of recurrence than the other types. Reichart,

Phillipsen and Sonner in 1995 reported that the incidence of recurrence of follicular ameloblastomas is higher compared with the plexiform type¹⁵. A study done by Ueno, Mushimoto and Shirasu in 1989 had reported very significantly higher recurrence rate ($P < 0.01$) in follicular ameloblastoma (56.8%) than the plexiform type of ameloblastoma (32.3%)²¹. It is important to identify the histological sub type as this will affect the pattern of recurrence significantly. According to the findings of the present study, acanthomatous sub type had a very high recurrence rate (38.4%).

In a study done by Waldron and El-Mofty in 1987, the incidence of desmoplastic ameloblastoma was found to be as high as 12.7%⁴. Although this study does not give a definitive recurrence rate for desmoplastic ameloblastoma, Takata et al in 1999 reported a recurrence rate of 14% where as for non- desmoplastic ameloblastoma it was 20%. According to Keszler, Paparella and Dominguez¹⁰ recurrence rate for desmoplastic ameloblastoma was 21.4% where as for non-desmoplastic ameloblastoma it was 10.1%. However, among the cases in the present study there was only one case of desmoplastic ameloblastoma, which did not have any recurrence.

According to Olaitan & others in 1998 the highest incidence of recurrence of ameloblastoma was found in the third decade of life¹³ but in the present investigation highest recurrence rate was observed in the older age groups (sixth and seventh decades

of life). Unicystic ameloblastoma occurred in younger individuals than those affected by the conventional type. Therefore it could be expected to observe a higher rate of recurrence in unicystic ameloblastoma in younger patients than the older. Further it has been described that the rate of growth of ameloblastoma is more rapid in younger age groups, especially in the mandible¹⁶.

By reviewing 116 cases of ameloblastoma, Waldron and El Mofty in 1987 reported that 88% of them were in the mandible and of these, 61% were in the posterior part of the mandible⁸. In the present study, 94% of the cases were in the mandible and most of them were in the posterior part of the mandible. About 90% of the recurrences were from the mandible and recurrence rate for mandibular ameloblastoma was 36.72%. There are studies, which report a higher recurrence rate in the ameloblastoma in maxilla compared to that in the mandible¹³. The present study also showed the same results (recurrence rate of 43 % in maxillary ameloblastoma). There were no recurrences in the anterior region of the maxilla where early detection and complete surgery is possible. However, there are studies that have reported recurrences of unicystic ameloblastoma in the maxilla¹⁸.

In the literature there is some confusion regarding the terminology and possible histogenesis of unicystic ameloblastoma. In the present study the terms mural, luminal and intraluminal which explain the histopathological features were used. 24.5% of unicystic ameloblastoma cases reported in this

series were recurrences. This is comparatively a high figure when seen with the studies found in the literature.⁸ Olaitan and Adekeye have reported less aggressive nature of this type¹². 60% of the mural type of unicystic ameloblastoma showed recurrences. The histopathological features of the mural type of unicystic ameloblastoma may explain the aggressive nature, as there is proliferation of ameloblastic epithelium in to the capsule. Studies have reported the presence of tumour islands in the fibrous capsule, which may indicate a high risk of recurrence^{11,18}. Apart from the tumour islands present within the capsule, treatment modality may also play a role in the recurrence. Conservative measures, such as enucleation have been performed for almost all-primary cases of unicystic ameloblastoma in this study. Some cases were marsupialized because of the clinical and radiological diagnosis of dentigerous cyst. Some of the recurrent luminal and intra luminal types of unicystic ameloblastoma may have mural thickenings at a different place other than the examined area. Thomposn & others indicated multiple, even serial sections in order to identify the type accurately²⁰. Olaitan and Adekeye in 1997 have indicated the necessity for less aggressive surgery for unicystic ameloblastoma over conventional ameloblastoma¹². However, Ackerman, Altini and Shear in 1988 had reported the necessity of radical treatment for the mural type of unicystic ameloblastoma.¹ Gardner and Corio in 1984 also reported the same treatment modality for the mural type⁹. Many other investigators suggest, that less aggressive surgery can be used

for the luminal and intraluminal types¹⁹. However, it is very important to follow up all the patients to identify recurrences early.

Most of the cases of conventional ameloblastomas in this series were treated by conservative surgery. Several authors have found recurrence rates as high as 50-90% for ameloblastomas treated by conservative measures.⁶ Recurrence after radical surgery has been reported to be minimal¹⁵. Determination of the margins of a resection requires an understanding of the growth characteristics of ameloblastoma. Many authors have stated that the tumour growth occurs in pathways of least resistance so that it infiltrates through cancellous bone¹⁹. Therefore radical bone resection together with removal of adjacent soft tissue, as recommended by Thomas and Williams in 1993 is likely to give a low recurrence rate. According to Adekeye and Lavery² (1986), the treatment of choice is en block dissection with preservation of lower border of the mandible or radical resection often including adherent soft tissues and skin. However, recurrence of ameloblastoma in soft tissue after hemimandibulectomy was observed in one patient in this series. Although we did not observe a recurrence in bone grafts after radical surgery, Zachariades²² has reported four cases of recurrence within the bone grafts. The time period between primary surgery and the time of recurrence varies considerably from 3 months to 38 years. As Collins and Harrison in 1993 suggested, a long-term follow up of all cases of ameloblastoma is needed due to their

unpredictable nature and the time intervals between recurrences⁶.

Among the 136 cases of ameloblastoma in this study, there was not a single case with malignant transformation. Although ameloblastoma is a locally aggressive benign odontogenic neoplasm, there are many cases reported in the literature where malignant transformation was observed³.

Conclusion

Although ameloblastoma is a rare benign tumour, it has a high rate of recurrence especially if it was treated by conservative surgery. Identification of the histological types and subtypes are very important because the histological type has an impact on the recurrence rate. Follicular ameloblastoma had a very high incidence of recurrence than the other types. Acanthomatus subtype of follicular ameloblastoma showed a very high recurrence rate. Although the recurrence rate of unicystic ameloblastoma is less, mural subtype of unicystic ameloblastoma showed a very high rate of recurrence. Highest recurrence rate for ameloblastoma was found in the sixth and seventh decades of life. Maxillary ameloblastomas recur more frequently than the mandibular ameloblastomas. Conservative surgery can be used for luminal and intra luminal types of unicystic ameloblastoma, but radical surgery is advisable for other types of ameloblastoma. Long-term follow up is recommended to identify any recurrence.

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ORAL INTRAVASCULAR PAPILLARY ENDOTHELIAL HYPERPLASIA (MASSON'S TUMOUR)- CLINICO PATHOLOGICAL ANALYSIS**Siriwardena BSMS and Tilakaratne WM,**

Department of Oral Pathology, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka.

Introduction

Intravascular papillary endothelial hyperplasia (IPEH) is a benign non-neoplastic vascular lesion first described in 1923 by Masson in the infected hemorrhoidal veins of a 68-year-old patient. He described this lesion as a neoplastic process consisting of papillary hyperplasia of the endothelial cells, with consequent obliteration of the vascular lumen, followed by degenerative changes¹. Although relatively rare, there are numerous accounts of IPEH in the literature, describing its predilection for the head and neck region. The first oral lesion, located in the labial mucosa, was reported in 1978². The present study is a retrospective study on IPEH.

Material and method

Histological sections of 136 cases reported as vascular malformations were reviewed from the archives of the Department of Oral Pathology, Faculty of Dental Sciences, University of Peradeniya from January 1996 to December 2002. The cases with inadequate data were excluded from the study. Histological criteria for the diagnosis of IPEH was applied to all 135 cases.

Results

12 cases were identified as IPEH, of which 3 cases were diagnosed previously. Clinical findings are summarized in table 1. Out of 12 cases 8 were females and 4 were males. The youngest patient was 4 years old and the oldest was 75 years old. The commonest site of occurrence of IPEH appeared to be the tongue with 5 lesions on the dorsum of the tongue and 2 were on the ventral surface of the tongue. 4 lesions involved the lip and one each was on symphyseal region and the palate. The diameter of clinical lesion ranged from 0.5cm to 2cm. Clinical diagnosis of haemangioma was provided in 6 cases while, 3 cases were diagnosed as mucoceles. One each was given the clinical diagnosis as minor salivary gland tumour and organizing blood clot.

According to the histopathological classification 2 cases were classified as pure form showing papillary structures attached to the wall of the dilated vascular cavity (Fig 1). Out of the 12 cases, 7 were recognized as mixed form. There were 3 cases of extra vascular type (Fig 2). Interestingly one case of extra vascular type was associated with a low-grade mucoepidermoid carcinoma.

Table 1

Case No.	Sex/Age	Duration (Months)	Location	Size (cm.)	Clinical Diagnosis	Histological Form
1	45F	1	Tongue	0.5x0.7	Haemangioma?	Mixed
2	41F	4	U/Lip	1x1	Minor salivary gland tumour?	Mixed
3	15F	1/52	Tongue	2x2	Haemangioma?	Mixed
4	4M	6	U/Lip	1.5x1	Haemangioma?	Mixed
5	63F	3	Tongue	1.5x1.5	Haemangioma?	Pure
6	54F	1/52	Tongue	1.5x0.8	Haemangioma?	Mixed
7	55M	1	Tongue	0.5x0.5	Mucocele?	Mixed
8	75M	4	L/Lip	1.5x1.5	Mucocele?	Extravascular
9	20M	3/52	L/Lip	2x2	Mucocele?	Pure
10	6F	1	Chin	2x1.5	Haemangioma?	Mixed
11	60F	1	Tongue	2x1	Organizing clot?	Extravascular
12*	48F		Palate			Extravascular

*The case associated with mucoepidermoid carcinoma

Discussion

Intravascular papillary endothelial hyperplasia (IPEH) is an unusual benign, non-neoplastic

vascular lesion, first described by Masson in hemorrhoidal vessels as vegetant intravascular

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haemangioendothelioma (he'mangioendothe' liome ve'ge'tant intravasculaire) and the name Intravascular papillary endothelial hyperplasia was given by Clearkin and Enzinger in 1976³. The histogenesis of IPEH remains controversial. It is currently thought to represent an exuberant, organization and recanalisation of a thrombus, an interpretation supported by immunohistochemical studies. In the earliest stage, the endothelial cells are positive for ferritin, followed by a positive reaction for vimentin and become positive for factor viii-related antigen when the lesion becomes matured⁴. This progression is also seen in ordinary organizing thrombus and the ultra structural features, further supports the view that IPEH is a peculiar form of organizing thrombus⁵. It occurs in previously normal vessels or in varices, hemorrhoids, hematomas, pyogenic granulomas, hemangiomas and angiosarcomas. It presents in 3 different settings. First it occurs as a pure form involving an isolated blood vessel (primary). Secondly it appears as a focal change in a variety of pre existing vascular lesions including hemangiomas, hemorrhoidal veins and varices (secondary) and rarely in an extravascular location in association with a hematoma. The 'de novo'

(pure) form is usually found in the extremities (particularly fingers) and the head and neck region, whereas the type engrafted or pre-existing vascular disorder (mixed) tends to be in the trunk ⁶. The main significance of identification of IPEH is its microscopic resemblance to angiosarcoma because of the formation of papillary structures, anastomosing vascular channels and plump endothelial cells. However the location (intravascular nature), lack of cellular atypia, absence of mitoses and necrosis and characteristically fibrinous and/ or hyaline appearance of the papillary stalks and frequent of residual organizing thrombi allow an angiosarcoma to be excluded. Intravascular atypical vascular proliferation, spindle cell hemangioendothelioma and malignant endovascular papillary endothelioma or Dabska's tumour are the differential diagnosis for IPEH. The latter is a low grade, locally invasive angiosarcoma of childhood. It shows a florid papillary proliferation of atypical endothelium in large vascular spaces that produces the appearance of giant glomeruli⁵.

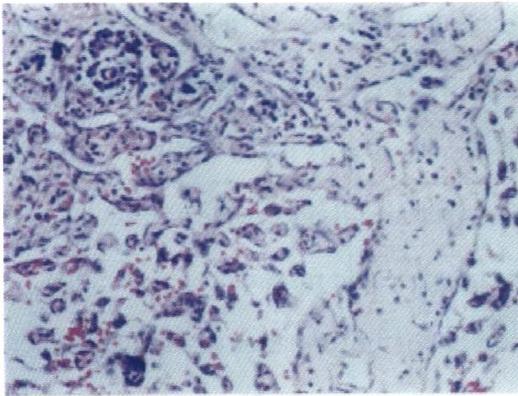


Fig. 1. Papillary tuft formation
(Intra vascular type)



Fig. 2. Organizing thrombus showing features
of IPEH (Extra vascular type).

This study is in agreement with other reports with a few differences (table 1). The age of the patient varies from a few months to 80 years. The average age for all three types is 34 years. The lips are most frequently involved followed by tongue, buccal mucosa, mandibular vestibulae and commissure⁵. In contrast, tongue was the commonest site in our series. Although there is no sex predilection according to the literature it seems to have a female predilection in the present study. Histologically the lesion is characterized by anastomosing vascular channels, with papillary tuft formation and a prominent lining of endothelial cells within a vascular lumen. These papillary structures appeared as bundles with one or more stalks

attached to the wall of the dilated vascular cavity or as multiple isolated papillae sometimes freely floating in the space. An organizing thrombus is frequently associated with the lesion. Excision of the lesion is the treatment of choice.

Masson's tumour is an uncommon lesion thought to be an atypical manifestation of an organizing thrombus and its rarity may, in part, reflect a lack of histological differentiation in the past. However the lesion's principle significance lies in the fact that it can be mistaken for malignant entities such as angiosarcoma. Accurate diagnosis of these lesions require careful microscopic examination and close clinicopathological correlation.

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MULTIPLE SYNCHRONOUS TUBERCULOUS ULCERS IN MAXILARY TUBEROSITIES AND UPPER ALVEOLI

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Introduction

Tuberculosis (TB) is a systemic disease affecting all ages, usually caused by *Mycobacterium tuberculosis*. From the approximately 8 million TB cases that arise annually, 3 million occur in South and Southeast Asia¹.

Initial tuberculous lesions are usually pulmonary. Tuberculous lesions may involve the head and neck, the most common presentation being a mass in the cervical region². Oral tuberculous lesions are rare and are usually secondary to pulmonary involvement especially in middle aged and older patients. Primary oral TB is extremely rare, and generally occurs in younger patients associated with cervical lymphadenopathy³. Intra oral TB can occur virtually in any site within the oral cavity, and the clinical presentation may vary, the ulcerative form being the most common³.

The present report deals with TB occurring as painless ulcers bilaterally in the maxillary tuberosities

and upper alveolus areas in a 42-year-old male in whom pulmonary involvement was detected subsequently.

Case Report

A forty-two year old male carpenter presented to the Oral and Maxillofacial Unit, Base Hospital, Panadura, in February 2002 complaining of leakage of oral fluids from the left nostril.

The patient noticed the nasal discharge from January 2002. Prior to that, he had a history of loss of appetite, tiredness, breathlessness on exertion, chest pain, general malaise, loss of weight high fever and sweating in the evenings of about six months duration, for which he had received medication. He had had a dry cough for about a month.

The medical history revealed that the patient had been diagnosed and treated for acute myocardial infarction in 1991, but was not on any medication at present.

On general examination the patient appeared emaciated. He had a recurrent dry cough. Auscultation of the chest revealed the presence of crepitations over both lung fields. Bilateral, submandibular lymph nodes and the right side jugular digastric lymph nodes were tender and movable on palpation.

Non-tender, bilateral ulceration was present in relation to maxillary tuberosity areas (Fig 1.). In both sides, the deep crater like, ulcers were present posterior to the maxillary first molar region and extended from the hard palate into the buccal sulcus. The ovoid ulcer in the right side measured approximately 4 cm x 3 cm in dimension and its roughened floor was covered with yellowish slough while the base was indurated. Granulation tissue was present at the margins. The ulcer in the left side was almost triangular in shape and was approximately 3 cm x 3 cm in dimensions and the base was indurated. Granulation tissue was visible surrounding the ulcer. An oro-antral communication existed at the base of the ulcer.

On investigation, the patient's ESR was 16mm in the 1st hour and the chest radiograph showed bilateral patchy nodular opacifications in the upper and middle lung fields with evidence suggestive of cavitation (Fig

2.). Sputum was positive for acid and alcohol fast bacilli (AAFB). Culture of the bacillus was not carried out. The H & E stained section from the incisional biopsy showed numerous epithelioid granulomas in the corium containing frequent Langhans type giant cells (Fig 3.). Small foci of caseation were evident in some granulomas (Fig 4.). Although AAFB could not be demonstrated in the tissues, the oral lesions were diagnosed as tuberculous ulcers, secondary to pulmonary tuberculosis.

The patient was started on the WHO recommended four-drug anti-tuberculous drug regimen of rifampicin 450mg, isoniazid 300mg, ethambutol 800mg and pyrazinamide 1.5g daily for two months, in accordance with the treatment protocol of Sri Lanka and the sputum was negative for AAFB on investigation. The patient was then started on a two-drug regimen of rifampicin 450g and isoniazid 300mg daily. The sputum was negative for AAFB at the fifth and the sixth months of treatment. The patient is reviewed regularly for any recurrences.

The ulcers had healed completely upon completion of the drug regimen. Six weeks following the completion of the drug regimen, the oro-antral fistula was surgically corrected.

Multiple synchronous tuberculous ulcers in maxillary tuberosities and upper alveoli



Figure 1 Multiple tuberculous ulcers in the maxillary tuberosities and maxillary alveoli in a 42-year-old male patient.

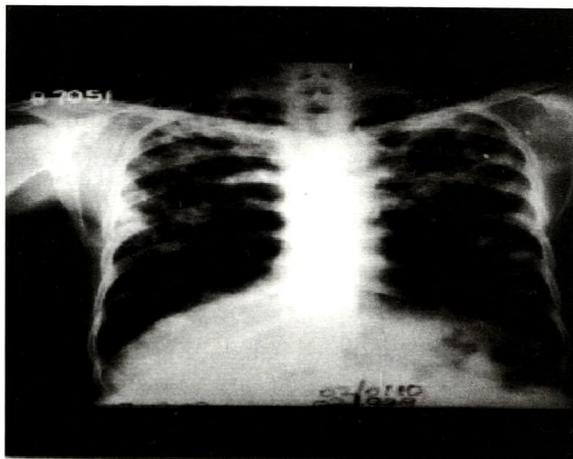


Figure 2 Chest radiograph of the patient showing bilateral patchy nodular opacifications in the upper and middle lung fields with cavitation.

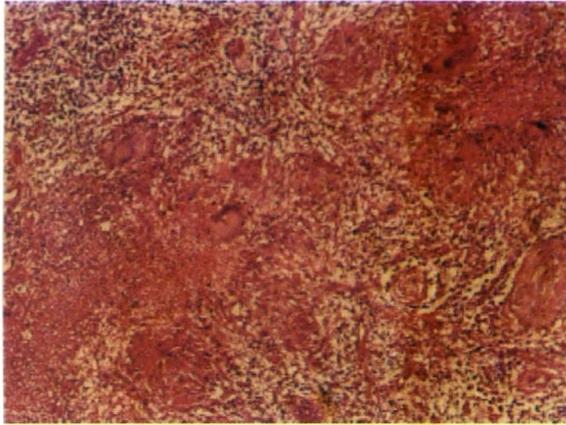


Figure 3
Epithelioid granulomas with frequent Langhans type giant cells (H & E stain X100).

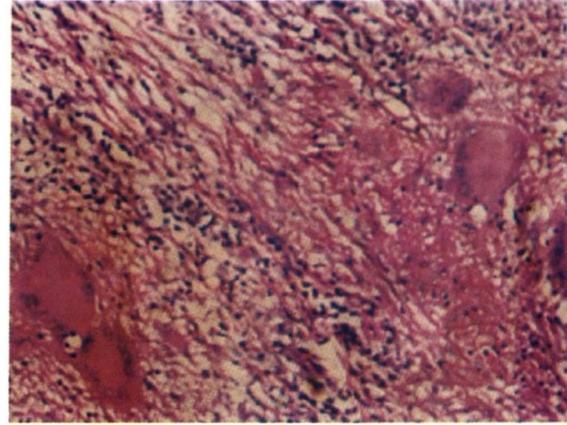


Figure 4
Small foci of caseation in some granulomas (H & E stain X200).

Discussion

Mycobacterium tuberculosis hominis is responsible for most cases of pulmonary and extra pulmonary TB including oral TB. However, *M. avium-intercellulare* complex, *M. Kansasii*, *M. Bovis*, *M. scrofulaceum* and several other rare species have also been implicated.

Poor socio-economic conditions, overcrowding, inadequate nutrition and lack of hygiene are risk factors for development of TB. Occupation influences the resistance of an individual towards TB. Exposure to dust, especially to silica dust, favours TB. Exposure of this patient to wood dust for an extended period of time may have adversely affected his resistance

towards TB⁴. Psychological stress and chronic debilitating diseases also lower resistance. In areas of the world where HIV infection is prevalent, this infection has become the single most important risk factor for the development of TB⁵. TB is a leading cause of death in individuals who are HIV positive and accounts for about 15% of AIDS deaths worldwide¹.

Primary TB is the form of disease that develops in a previously unexposed, and therefore unsensitized, individual and the source of the organism is exogenous. Secondary or post primary tuberculosis arises in a previously sensitised host⁵. The clinical presentation of the pulmonary disease in this patient was consistent with that of post-primary TB.

Multiple synchronous tuberculous ulcers in maxillary tuberosities and upper alveoli

Oral tuberculous lesions are rare and seen in 0.05-1.5% of patients with TB. TB can occur virtually in any site within the oral cavity and cases have been reported most commonly in the tongue and gingiva⁽³⁾. In the present case, the oral lesions were probably secondary to pulmonary involvement. This supports the view that oral TB is usually a secondary manifestation of pulmonary TB. The ulcers were painless, which is an unusual presentation as they are usually painful according to the literature³. There were no signs or symptoms of involvement of other systemic sites. The sites of the intra-oral lesions were unusual, as they were in the maxillary tuberosity areas and upper alveoli. The maxillary tuberosity is not a site of predilection for TB lesions according to literature. In comparison, adjacent sites such as the gingivae, hard and soft palates, buccal mucosae and the tooth sockets are more frequently affected.

TB may present in the oral cavity as superficial ulcers, erythematous patches, indurated soft tissue lesions with a granular surface, nodules, fissures, as tuberculous osteomyelitis or simple bony radiolucencies in the jaws³. However, the ulcerative form is the most common with no associated caseation of the dependent lymph nodes³, and was the presentation of this case as well. In one study, the most frequently encountered type of oral ulceration had a roughened or granular surface, usually surrounded by oedematous and hyperaemic mucosa. Deep ulceration with irregular margins and mandibular bone destruction could also be seen in a few patients³. In our patient, the deep ulcers had a roughened floor and there was evidence of maxillary bone destruction

due to the formation of the oro-antral fistula in the ulcer in the left side. Therefore, these lesions show a combination of the features of the ulcers described previously, which may be an unusual presentation.

Another characteristic of the present case is the multiplicity of tuberculous lesions in the oral cavity. The ulcers on each maxillary tuberosity and upper alveolus, were clinically almost symmetrical. Multiple ulcerations have been reported only in the tongue and hard palate⁶. In an earlier study, multiple lesions were seen in 46.7% of the patients³. However, bilateral almost symmetrical ulceration as seen in this patient has not been reported in the literature.

According to the clinical features observed in this patient, leukaemias, Hodgkin's lymphoma, infectious granulomatous diseases (TB and actinomycosis), deep mycoses (histoplasmosis, cryptococcosis, aspergillosis and coccidioidomycosis), sarcoidosis and multiple primary malignant ulcers due to squamous cell carcinoma (SCC) were considered in the differential diagnosis. Due to the presence of bilateral, almost symmetrical lesions, local causes of ulceration were not included in the differential diagnosis. However, SCC was considered in the differential diagnosis because the patient had the habit of betel quid chewing. The results of the sputum test and the radiographical and histopathological appearances were not consistent with any of the above diseases except TB and therefore, a definitive diagnosis of TB was made.

Conclusion

TB presenting as oral ulcers in the maxillary tuberosity areas and upper alveoli as bilateral lesions is extremely rare, in which clinical, radiological and histopathological features can mimic several diseases, ranging from malignancies to infectious diseases. This can lead to frequent diagnostic errors causing delays in adequate management. Hence, the importance of a high degree of clinical suspicion and consideration of all the clinical, radiological and histopathological findings and the laboratory tests are highlighted in the present case.

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Professor Lakshman Samaranayake appointed as the new Dean of the University of Hong Kong, Faculty of Dentistry and, the Director of the Prince Philip Dental Hospital at Hong Kong.

The University of Hong Kong has appointed Professor Lakshman (Sam) Samaranayake BDS (Sri Lanka), DDS (Glas), FRCPath (UK), MIBiol, C Biol (UK), FCDSHK, FHKCPath, FHKAM (Pathol & Dent Surg.) as the Dean of the Faculty of Dentistry, University of Hong Kong and, the Director of the Prince Philip Dental Hospital, as a successor to Professor Fred Smales, who retired recently. Professor Samaranayake concurrently holds the Chair of Oral Microbiology. Previously, he has held teaching/honorary consultant positions at Universities in Sri Lanka, United Kingdom and Canada. He is also a Honorary Professor at the Eastman Dental Institute, University College London and, Thammasat University, Thailand.

Professor Samaranayake is the author /co-author of over 200 peer-reviewed papers, 150 other publications and, six textbooks, some translated into six different languages. He has lectured in more than 30 countries on microbiology, mycology and, infection control. Professor Samaranayake is also the current Chairman of the Science Commission of the International Dental Federation (FDI), and a member of the FDI council and the FDI Board of Directors. Currently he serves as a World Bank Consultant to the Problem Based Learning (PBL) program at the University of Jakarta, Indonesia and, the Government of Hong Kong secondary school sector.

Editor, SLDJ

Dr. Dickson De Silva

My wish to write a few lines of appreciation of this dynamic personality who has worked tirelessly for the emancipation of the Dental Profession, was mainly due to the association I had with him, during my undergraduate days in 1971. I had the opportunity (as the President of Dental Students Association) to invite him to be the Chief Guest at the Annual Scientific Sessions of the Dental Students Association. He was the President of the Ceylon Dental Association at the time. Since then till a few months prior to his death I have been seeking advise and having discussions on professional matters whenever the necessity arose.

Dr. Dickson De Silva was born in 1921 and qualified as a Dental Surgeon in 1949. He joined the Department of Health and served in Galle, Kalutara and Panadura hospitals and had to forsake government service for personal reasons to set up a General Dental Practice in Matara where he served for over thirty years.

His captivating smiles while in conversation, his dedication and the quality of care and compassion to his patients helped build up a very successful practice. He was very straightforward and outspoken in all his dealings. He never promised anything he was unable to do and deceive people with false hopes.

Dr. Dickson De Silva was one of the pioneers who summoned all Government Dental Surgeons at that time (1949) and formed the Government Dental Surgeons Association. His colleagues honoured him by electing him the first President of the G.D.S.A. an honour cherished by many to this day. Since that day there had been many memorandum written by him on the improvement of the conditions of service to the dental surgeons.

In 1957 when moves were afoot by the Ministry of Health to legalise the practice of dentistry by dental mechanics it was the concerted effort of Dr. Dickson De Silva with the Ceylon Dental Association, which prevented such legislation. He initiated a programme of public awareness on the dangers of unqualified persons being allowed to practice dentistry by sending a memorandum to each and every member of Parliament and publishing many articles in the newspapers at that time. He very clearly pointed out the grave risk that the public would be exposed if the practice of dentistry was allowed to the untrained, unqualified, self appointed mechanics. With these protests the matter was not pursued by the Minister.

In 1961 at the Annual General Meeting of the Ceylon Dental Association Dr. Dickson De Silva spoke at length on the need to have a separate

Directorate for Dental Services in the Department of health. A Sub Committee had been appointed to draft a suitable memorandum to the Ministry. This is the first record of a memorandum sent to the Ministry on this request. A Deputy Director General, Dental Services was finally appointed in 2002 ie 41 years later.

Due to dissatisfaction on the conditions of service of the Dental Surgeons, followed by trade union action by the G.D.S.A. in 1957, the Prime Minister appointed a special committee consisting of Dr. Dickson De Silva, Mr. L.B. De Silva retired Puisne Judge, and Mr. S.B. Senanayake Director of Establishments to consider and make recommendation on matters such as salaries and allowances of Dental Surgeons to be equalized to

those of Grade Medical Officers, Specialist qualification and channelled consultation practice. Dr Silva's dissenting report was that of a visionary who had seen things- 40 years ahead. Most of his recommendation have been accepted and implemented over the years at various times.

In 1971 Dr. Dickson De Silva presented to the Ceylon Dental Association a draft of the proposed Dental Act. The minute's book of the CDA. records it being passed unanimously and that it was submitted to the Minister of Health. This had far reaching consequences to the independence of the Dental Profession. However this proposal was not implemented for reasons best known to the C.D.A. members at that time.

At a Commonwealth Foundation Meeting in Sydney in 1970 where Dr. Silva was representing the Ceylon Dental Association as its President, the Foundation decided to support the request of Ceylon to establish

Professional Centre in Colombo. Following this the Commonwealth Foundation granted a donation of \$50,000 to the Organisation of Professional Associations of Sri Lanka towards the cost of construction of its building.

In 1986 at the request of Late Professor Bambaradeniya, Dr. Dickson De Silva was following up with the Japanese Ambassador, the J.I.C.A. aid for the new Faculty of Dental Science. This project saw the light of day due to untiring efforts of many dedicated persons like him.

In his own field of Dentistry he was always there to fan the flickering flame of General Dental Practice by rallying round to form the College of General Dental Practitioners (Founder Member) and helping financially the acquisition of an office for the General Dental Practitioners and offering advice and support whenever we needed them.

The Profession will always remember him.

May he attain Nibbana

Dr. Hilary Cooray

Instructions for Authors

The Sri Lanka Dental Journal publishes the following categories of articles which have relevance to Dentistry and allied sciences.

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- 2) **Material and methods:** A description of experimental procedure including applicable statistical evaluation.
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3-5 key words according to Index Medicus should be provided.

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The authors should consider the ethical aspects of their research and ensure that the work has been approved by an appropriate Ethical Committee. Where applicable,

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Corporate (collective) author

WHO COLLABORATING CENTRE FOR ORAL PRECANCEROUS LESIONS. Definition of leukoplakia and related lesions: an aid to studies on oral precancer. *Oral Surg Oral Med Oral Pathol* 1978; 46: 518-539.

Unpublished article

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