Knowledge, Opinions and Practice of Last Year Dentistry Students of Shahid Beheshti University Regarding Diagnosis and Differentiation of Malignant Lesions

[1]Jamileh Beigom Taheri, [2]Mahkameh Moshfeghi, [1]Fahimeh Anbari,
[1]Zahra Namazi and [1]Sedigheh Bakhtiari
[1]Department of Oral Medicine, [2]Department of Oral and Maxillofacial Radiology,
School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract: The present study assessed the knowledge, opinions and practice of last year dentistry students of Shahid Beheshti university about diagnosis and differentiation of malignant jaw lesions during 2006-2007. This descriptive study was performed by the means of a self-administered questionnaire that was filled out by the last year dentistry students attending their last practical radiology subject. The questionnaire included two sections of knowledge and practice with opinion. The questionnaire was given as a final exam of this subject. The census sampling was taken and 34 students (61.8% females and 38.2% males) were participated. No consultation was possible and they had to answer the questions under the controlled conditions. The scores were analyzed by Mann-Whitney, Spearman ratio and Kendall tau-b ratios. The average of participants scores on knowledge indicated low level knowledge of students on radiographic features of the jaws. The students believed that border of lesions and its influence on adjacent structures had the most important role on definition of benign and malignant lesions. It has been shown that students knowledge about radiographic features of malignant lesions is low. However, more studies are needed in this field.

Key words: Oral malignancies, educational curriculum, diagnosis and differentiation, Self-administered questionnaire, dentistry student, Iran

INTRODUCTION

Oropharyngeal malignancies are responsible for 2-3% of total death occurred because of the cancers in USA (Horowitz *et al.*, 2000; Yellowitz *et al.*, 2000). The annual incidence of oral and larynx malignancies is about 30,000 in USA whereas 8,000 deaths occur at the same time because of these malignancies (Horowitz *et al.*, 2000; Yellowitz *et al.*, 2000; Canto *et al.*, 2002). These lesions involve males twice more than females. The survival rate of oral and pharyngeal lesions is about 52% (78% for localized lesions and 19% for advanced lesions) (Horowitz *et al.*, 2000; Yellowitz *et al.*, 1998). Despite impressive progress in medication and treatment of oral cancers, the 5 years survival rate of oral cancers did not improve much in last century (Yellowitz *et al.*, 1998; Alonge, 2003).

The survival rate of these lesions is stage-dependant and treatment of lesions that are being diagnosed at earlier stages to be associated with more successful management (Alonge, 2003; Clovis *et al.*, 2002). Furthermore early diagnosis of malignant lesions is followed by increased survival rates. Oral lesions are misdiagnosed with normal or other pathologic patterns of the oral cavity at earlier stage so the diagnosis of lesions delay to late stage in most cases (Yellowitz *et al.*, 1998). Oral and pharyngeal malignancies are diagnosed at the mean age of 63 years (Yellowitz *et al.*,2000; Alonge, 2003). In addition these lesions in black patients are often diagnosed at a later stage comparing to white patients (Horowitz *et al.*, 2000).

Incidence of a malignant tumor suggests uncontrolled growth of a tissue, these tumors show local invasion and increased dysplasia while they involve the adjacent lymphatic tissue and metastases to farther areas (Yellowitz *et al.*, 2000). Viruses, exposure to radiation, carcinogenic chemical agents and genetic deficiencies are some of the etiologic factors of cancer (White and Pharoah, 2003). Furthermore, the followings are the signs of a malignant tumor displaced teeth, tooth mobility happened in a short time, malodor, indurations or rolled border, exposed bones, impairment of sensory and motor nerves, lymphadenopathy, weight loss, dysgusia, dysphagia, abnormal bleeding, delayed wound healing

---

Corresponding Author: Sedigheh Bakhtiari, Department of Oral Medicine, School of Dentistry,
Shahid Beheshti University of Medical Sciences, Tehran, Iran

pain and swelling with no specific dental reason (White and Pharoah, 2003). Radiologic imaging has several important roles in managing cancerous patients it is useful for diagnosing the tumor and determining the tumor stage, it also helps surgeons or oncologists to define the tumor extent for its excision or radiotherapy (White and Pharoah, 2003). Radiologic imaging helps dentist to assess lymphatic involvements and the treatment outcome. Radiographic features suggesting malignancy include: specific view of malignancy border, ill-defined margins and usually it is not corticated and there is no soft tissue capsule (White and Pharoah, 2003). Finger-like invasion of the tumor in different directions results in bone destruction so it develops radiolucent areas that is an important sign for malignancies (White and Pharoah, 2003). The internal structure of malignant lesions is mostly radiolucent since they do not produce new bone or do not stimulate reactive bone formation (White and Pharoah, 2003). Dentists must examine all patients for the possible malignancies (Yellowtiz and Goodman, 1995). Insuffcient knowledge leads to late diagnosis of the tumor that delays management and results in invasive therapies or even the patient's death (Clovis *et al.*, 2002). Early diagnosis of malignancies of oral cavity plays an important role in their prognosis. A plain image of a tooth taken by a dentist may lead to the diagnosis of a malignancy when the dentist enjoys necessary knowledge and information. Furthermore, it is necessary to determine the knowledge and practice of dentists regarding different issues such as radiographic patterns of malignancies to improve the quality of educations in dental schools. Early diagnosis of oral malignant lesions would also prevent financial burden on health care system and patients.

The present study assessed the knowledge, opinions and practice of last year dentists students of Shahid Beheshti University about diagnosis and differentiation of malignant jaw lesions during 2006-2007.

MATERIALS AND METHODS

This analytical-descriptive study was performed by means of self-administered questionnaire. Last year dental students who participated on their last practical radiology course were considered in the study by census sampling. The study questions were considered as apart of final exam of the course. The questionnaire included two sections of knowledge and practice together with opinion. The questions were obtained from the reference book of Oral Radiology: Principles and Interpretations (White and Pharoah, 2003) with the assistance of professions and questionnaire criteria. The questions started with general issues and ended in retail subjects. The 1st section had

five stages. In the first stage, the general knowledge and practice of the students were assessed when receiving a lesion in the radiographic image. Three images of benign lesion, malignant lesion and a normal picture were shown to the student for 1.5 min and they were asked to interpret the lesions in 9 min. Each followings had one positive score: the lesion centrality, generalized or locality of the lesions, unilateral or bilateral lesions, multifocal or single focal lesions, well-defined or ill-defined margins, in well-defined lesions, one of the followings should have been mentioned: punch out, corticated, sclerotic border and soft tissue capsule and in ill defined lesions invasion), the lesion form (round or irregular), lucency or opacity and the effect of the lesion on adjacent structures. The students received at least 0 score and maximum 9 scores at this part. In addition to this any correct interpretation of the image received another positive score while correct determination of benign or malignant lesions received 2 other scores. In the 2nd stage, the above aforementioned 9 characteristics were explained to the students and they were asked to give a brief illustration of each property together with their practice regarding each. The timing was considered for the students were similar to the previous stage. Each correct illustration received 2 positive scores.

In the 3rd stage, the students were asked to determine benignity or malignancy of the lesions without any interpretation. Two benign and malignant lesions were shown to the students with definite pathologic diagnosis and they specified the lesions nature in 3 min. In the 4th phase, important guidelines to reach a correct diagnosis of benign and malignant lesions were presented to the students. Then, they were asked to describe the lesions. In this stage, three images of malignant lesions, three images of benign lesions and one natural image were shown to them with no specific order. About 1.5 min were considered for each image. Correct reference to each of the previous 9 properties received 2 scores as well as 2 scores for the correct diagnosis of benignity or malignancy of the tumors. Each individual received maximum 140 scores up to this phase.

In the 5th stage, the lesions of the 4th phase were fully described by radiologists and the students were asked to determine the nature of the lesions including benign, malignant or normal images. Each image was shown for 1.5 min. Maximum 6 scores could be achieved in this stage. The 2nd part of the questionnaire included the student's opinion regarding diagnosis and differentiation of jaw lesions. The students were asked to give their score to any mentioned feature. The features were obtained from the reference books of radiology as a

basis for required interpretation in the diagnosis of benign or malignant lesions. The students scored the importance of the properties mentioned in the 1st stage except for the two characteristics of well-defined or ill-defined with (-2)-(+2) scores. The individuals were asked to use negative scores when the importance of the issue leads to incorrect diagnosis. The 0 score was used for the issues gained no importance according to the students while positive scores were considered for the issues that were important in the diagnosis and differentiation of the benign and malignant lesions in the students point of views. The total time for this section was 2 min.

No more explanations were provided for the students. The time for answering the questions was determined by the specialists. The questions were brief, exact and complete. Complicated term and expressions had been avoided and only the main dental radiology reference textbooks had been used. The content validity of the questionnaire was approved by the specialists of the department of Oral and Maxillofacial Radiology of Dental School.

The questions were printed in one side of the paper with appropriate line space and large enough font size in order to increase face validity. All images were panoramic views with enough resolution (magnification of 6 times larger) while the lesions were typical in nature using the images of reference books or scanned images of the patients referred to the oral radiology department.

The students were provided with similar adequate conditions of computer devices and video projectors in the exam session. Each questionnaire was coded and categorized by the means of Microsoft Excel 2007 software. The data were statistically analyzed by Mann-whitney, Spearman ratio and Kendall tau-b ratios.

RESULTS

About 34 students were participated in the study. The mean age of the student was 25.3 ± 2.9 years, the median of 24 years and the range of 24-37 years old. About 21 students (61.8%) were females and 13 ones (38.2%) were males.

The knowledge and practice
The first stage: The mean and standard deviation of the students scores were 9.6 ± 7.0, the median of 8.5 and range of 2-35 at this stage. The scores of 4 and 11.25 were placed on 25th and 75th percentiles. There was no significant difference between boys and girls in term of their scores in this stage (boys: 10.1 ± 7.3, girls: 9.2 ± 6.9) ($p = 0.53$).

The second stage: The mean score of the students was 28.1 ± 7.1 at the second stage of knowledge and practice questions. The median of the scores were 30 and the range was 12-52. The 25th and 75th percentiles of this score were 27.5 and 30, respectively. About 23 students (67.6%) gained the scores among 28-32.

The mean score of males and females were 27.1 ± 6.3 and 28.8 ± 7.6 respectively. No significant differences were found between males and females regarding the scores they achieved in this section ($p = 0.78$). The Spearman correlation ratio between the scores gained at this section and the previous section was 0.324 which was not statistically significant ($p = 0.062$).

The third stage: The mean scores of the students were 1.1 ± 1.2, the median was 0 and the range was 0-4 at this part. More than half of the participants (18 students, 52.9%) received no score at this section and only 2 students (5.9%) gained the score of 4. The mean score of the males and females were 1.1 ± 1.0 and 1.1 ± 1.4 with no significant differences ($p = 0.58$). The Kendall tau-b correlation ratio between the score at this section to the two previous parts were -0.121 ($p = 0.405$) and 0.141 ($p = 0.349$), respectively.

The fourth stage: The mean scores of the participants were 67.9 ± 14.5, the median of 65 and the range among 44-98 at this section. The scores of 57.5 and 78 constituted 25th and 75th percentiles of scores. The scores of male and female participants were not significantly different ($p = 0.48$). The mean score was 70.2 ± 15.5 in males and 66.5 ± 14.0 in females. Spearman correlation ratio of the scores gained at this stage were 0.128 ($p = 0.47$) and 0.590 ($p<0.001$) with the first and second parts and the Kendall's tau-b correlation ratio of this stage score with the third part was 0.014 ($p = 0.938$).

The fifth stage: The mean scores of the students were 4.3 ± 0.9, the median of 5 and the range of 2-5 at this section. The score of 4 was the 25th percentile and the score of 5 was the 75th percentile. The mean score of males were 4.2 ± 1.1 and the mean score of females were 4.2 ± 0.9 with no significant difference ($p = 0.969$). Kendall's tau-b correlation ratios between the scores of this section and four previous sections were 0.217 ($p = 0.127$), 0.330 ($p = 0.024$), 0.108 ($p = 0.502$) and -0.055 ($p = 0.692$), respectively.

Opinion: Two participants did not answer this question. The participants' opinion was shown in Table 1. The properties of 5 and 9 showed the mean above 1.

Table 1: The students opinion regarding important properties of an image leading to a correct diagnosis

Property	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	7 (%)	8 (%)	9 (%)
-2	3 (9.4)	6 (18.8)	2 (6.3)	3 (9.4)	-	1 (3.1)	4 (12.5)	-
-1	2 (6.3)	2 (6.3)	2 (6.3)	2 (6.3)	-	2 (6.3)	2 (6.3)	-
0	12 (37.5)	17 (53.1)	12 (37.5)	7 (21.9)	1 (3.1)	2 (6.3)	10 (31.3)	1 (3.1)
1	8 (25.0)	-	9 (28.1)	10 (31.3)	7 (21.9)	21 (65.6)	8 (25.0)	11 (34.4)
1.5	-	1 (3.1)	1 (3.1)	1 (3.1)	-	-	-	-
2	7 (21.9)	6 (18.8)	6 (18.8)	9 (28.1)	24 (75.0)	6 (18.8)	8 (25.0)	20 (62.5)
Mean	0.4	0.8	0.5	0.7	1.7	0.9	0.4	1.6
Standard deviation	1.2	1.0	1.1	1.2	0.5	0.9	1.3	0.6

DISCUSSION

Different studies have been done concerning the student's knowledge, opinion and practice but to the author's knowledge, no study assessed the issue regarding diagnosis and differentiation of radiographic views. So, the present study was a preliminary study and the results cannot be compared to the previous studies in term of questions content, the answers and the scores. In the first part of the questionnaire that assessed students knowledge and practice, no significant differences were noted between males and females (p = 0.53) and the mean scores of the participants were lower than the half of the maximum score (9.6±7.0).

The second stage also assessed the students knowledge and practice. The mean score at this section was 28.1±7.1 and no significant difference were noted between males and females (p = 0.78). Knowledge and practice of the participants were evaluated when confronting a lesion in a radiographic view at the third part. More than half of the students received no score and only 5.9% got the total score. Again, males and females did not differ in term of the score achieved at this section (p = 0.58). The fourth part also evaluated the students' knowledge and practice. The score range was among 44-98 with the mean of 67.9±14.5. No significant difference was found between males and females at this part (p = 0.48).

The participants had to determine the nature of the lesion benignity or malignancy at the fifth part. Their score were among 2-5 with the median of 5. No statistically significant difference was noted between males and females (p = 0.969) in this section that was similar to the results reported by (Yellowitz *et al.*, 1998; Clovis *et al.*, 2002; Alonge, 2003). The correlation ratios of different sections showed lower values with a few significances. This result suggests that poor knowledge and practice are independent entities that means students practice was not correlated to their knowledge so the students with better practice does not necessarily enjoy good knowledge. These results are compatible with Yellowitz *et al.* (2000) study in 1995 that assess knowledge, opinions and practices of general dentists regarding oral cancer and concluded incompatibility of

dentists knowledge and also inconsistency of their knowledge and practice (Yellowitz and Goodman, 1995). It was also similar to Yellowitz and Goodman (1995) study in 1998, assessed the physicians and dentists oral cancer knowledge, opinions and practices in USA and reported both groups to have poor knowledge of the issue while dentists perform routine examination for detecting oral cancer more than physicians (Yellowitz *et al.*, 1998). But it differs Yellowitz *et al.* (2000) survey that found a direct correlation between dentists knowledge and opinion about oral and pharyngeal cancer in USA. Furthermore, in our study students knowledge and practice were not related to their gender, although in Yellowitz *et al.* (2000) study in 2000 the dentists knowledge was directly related to female gender, engagement in state health-care facilities, graduation time and participation in oral cancer courses (Yellowitz *et al.*, 2000).

Most students demonstrated completely wrong description of the lesion due to inability to diagnose the lesion in radiographic view or misunderstanding normal anatomic landmarks with the lesions. Furthermore, they did not exhibit appropriate practice differentiating benign and malignant lesions after they were presented with a method of making a correct diagnosis . The pattern of the score distribution showed high disharmony in knowledge and practice level of the studied individuals. The students all used to study at the same school receiving similar education curriculum and also the same education staff so that this disharmonious and poor level of knowledge and practice can be due to their ignorance and different insentives among them. In the opinion-related questions part two properties of well or ill-defined lesions and the effect of lesion on adjacent structures received the mean scores of >1 as the students scored the answers with -2 and +2 range. This suggests them to pay more attention to these characteristics in the diagnosis and differentiation of malignant lesions from benign ones.

CONCLUSION

In present study students showed poor knowledge and practice regarding diagnosis and differentiation of malignant lesions of the jaws. Their practice was independent of their knowledge and these results were not significantly influenced by gender. As the study was

performed in one of the leading country dental schools and as a part of the students final exam, more poor knowledge and practice can be concluded among the students in the other dental schools.

REFERENCES

Alonge, O.K., 2003. Opinions about oral cancer prevention and early detection among dentists practicing along the Texas-mexico border. Oral Dis., 9: 41-45.

Canto, M.T., A.M. Horowitz, T.F. Drury and H.S. Goodman, 2002. Maryland family physicians knowledge, opinions and practices about oral cancer. Oral Oncol., 38: 416-424.

Clovis, J.B., A.M. Horowitz and D.H. Poel, 2002. Oral and pharyngeal cancer: Knowledge and opinions of dentists in British Columbia and Nova Scotia. J. Can. Dent. Assoc., 68: 415-420.

Horowitz, A.M., T.F. Drury, Goodman H.S. and J.A. Yellowitz, 2000. Oral pharyngeal cancer, prevention and early detection. Dentists opinions and practices. J. Am. Dent. Assoc., 131: 453-462.

White, S.C. and M.J. Pharoah, 2003. White and Pharaoh: Oral Radiology, Principles and Interpretations. 5th Edn., Mosby, St. Louis, MO, USA., ISBN-10: 0323020011.

Yellowitz, J., A.M. Horowitz, H.S. Goodman, M.T. Canto and N.S. Farooq, 1998. Knowledge, opinions and practices of general dentists regarding oral cancer: A pilot survey. J. Am. Dent. Assoc., 129: 579-583.

Yellowitz, J.A. and H.S. Goodman, 1995. Assessing physicians and dentists oral cancer knowledge, opinions and practices. J. Am. Dent. Assoc., 126: 53-60.

Yellowitz, J.A., A.M. Horowitz, T.F. Drury and H.S. Goodman, 2000. Survey of US dentists knowledge and opinions about oral pharyngeal cancer. J. Am. Dental Assoc., 131: 653-661.