Original article

Causes of Patient's Delay in Diagnosis of Head and Neck Cancers: A Community-based Cross Sectional Study in Iran

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Abstract:

Introduction: Head and neck cancers (HNCs) are among common cancers in the world and also in Iran. Early diagnosis is the most important factor for improving survival in cancer patients. The aim of present study is to evaluate the causes of patient delay in the diagnosis of HNCs at three cancer centers in Mashhad city, Iran.

Methods: One hundred-forty three HNCs from three cancer centers were interviewed in Mashhad. Data obtained by interview and from Medical documents, were entered into a questionnaire and analyzed using Chi-Square, compare means and Correlation tests.

Findings: The study included 143 subjects with HNCs and a mean age of 51.5±18.3. 58% of the patients were males. The mean patient delay was 161.8±380.1 days. 30.8% of the patients visited a physician during the first month. Low education, lower income, addiction, and living in rural areas were related to the patient delay.

Conclusion: The total time from patients' first signs or symptoms to doctor visits is comparably high in HNC patients. Public health education must be developed to decrease patient delay and so improve the prognosis of oral cancer treatment.

Keywords: Head and Neck Cancers, Patient delay, Iran.

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Introduction:

Oral cancer is a well-known global issue, especially in South and Central Asia (1). Despite advances in its diagnosis and treatment, oral cancer has one of the lowest survival rates of about 50% of the major types of cancer (i.e. breast, skin, testis, prostate, uterus, and urinary bladder cancer) (2, 3). With early diagnosis survival rates as high as 80% (stage I) can be achieved (3-8). Most of oral cancers are squamous cell carcinoma (SCC). Cancer is the third cause of death in Iran which translates into 30,000 deaths annually (9).Approximately 70,000 new cancer cases are diagnosed in each year in Iran9. Sargeran found a 30% survival rate for cancer in Iran, a figure which is much less than the global average (10). Patient delay is a delay on the part of the patient affected with cancer, referred as an interval between noticing any suspicious sign or

symptom and seeking professional care. There is not any standard time frame for the definition of "on time" referral, diagnosis and treatment in the field of head and neck cancers (HNCs). Some researchers have used self-established criteria such as 30 days, three weeks, or a median number of days or the stage of cancer at the time of diagnosis as a cut-off point for delay differentiation (11-13).

There are limited data about oral cancer delay in Iran (9, 10, 14). Current study plans to reveal different causes for the patient's delay in HNCs in the east of Iran. There are limited data about this issue in Iran, we want to explore whether causes of patient delay are similar to other parts of world or not.

Methods:

Participants and design:

The area in which the cancer patients were identified (eastern provinces: north, Razavi and south Khorasan and Sistan and Baluchestan) comprises population about 7,500,000 and all head and neck cancer patients of this area are supposedly treated in the university hospitals(Omid Hospital, Ghaem Hospital and the Reza Cancer Center) . This community-based cross sectional study enrolls all HNCs whether new cases or patients on follow-up sessions who had complete medical records for an initial diagnosis. Exclusion criteria were: 1) missing information or lack of consent on the patient's part, 2) recurrent or synchronous malignancies. An informed verbal consent was obtained from all patients who participated in this survey. The research ethics board of the Mashhad University of Medical Sciences (MUMS) approved the study protocol.

Data collection:

A single interviewer (A.E.) recorded the patient information (e.g. age, gender, residence, marital status, occupation, education, addictive habits, and the patient's access to care before arriving at the cancer center) along with the duration of the initial symptoms. An especially designed questionnaire was used. The patient's justification of the delay and the initial action was obtained by a multiple-choice question. The familial history of any type of cancer was also recorded. Tumor characteristics, such as site, histopathologic diagnosis, grading and staging (TNM system), were gathered from the medical records, if available. To restrict a recall bias, unrecorded dates (especially those related to patient recall) were validated by close relatives. Inaccurate data were excluded.

Variables and analysis:

The patient delay was defined as the time elapsed from the patients' first awareness of any sign/symptom related to cancer to his/her first consultation with a health care professional. Patient action was categorized into: a) immediate action: without any delay b) on time action: seeking care during the first month of awareness c) delayed action: a one- to three- month delay in seeking care d) late action: more than a three month delay. Also a mean and median were calculated for patient delay. The data analysis was predominantly descriptive, performed by SPSS software version 11.5 (Chicago,IL), and analyzed by the appropriate tests. For

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all quantitative values considering days, mean and median were calculated.

Findings:

The study included 143 patients with HNCs and a mean age of 51.5±18.3 (Range: 20-97), [F=48.3±20.1, M=53.8±16.6]. 58% of the patients were males. A detailed description of the study population's characteristics, such as marital status, residence, education, insurance, habits and history of cancer is provided in Table 1.

61.3% of the patients had SCC in different areas of the head and neck (tongue, pharynx, and maxillary antrum). 10.5% had nasopharyngeal carcinoma and 8.4% undifferentiated nasopharyngeal carcinoma. Other malignancies included salivary gland tumors, lymphoma, and melanoma (19.8%).

The tongue was the most common site of involvement (N=32, 22.4%), followed by the nasopharynx (N=29, 20.3%) and the larynx (N=17, 11.9%). Other sites of involvement were the salivary glands, neck, thyroid and parathyroid glands, nasal cavity, palate, paranasal sinuses, tonsils, and lips. It regard to the first presentation of cancer, a mass had been encountered by 36.4% of the patients, followed by pain (25.2%), and speech problems (14%).

Ulcer (11.9%), dysphagia (8.4%), pigmentation (3.5%) and bleeding (0.7%) were the other presenting signs and symptoms. These signs and symptoms were discovered by the patients themselves in 88.1% of the cases and by a family member in 9.1% of the cases, and in 2.8% of the patients, the signs were accidentally discovered by a physician. Grading of the tumor was only recorded in sixteen patients (grade1=5, grade 2=8, grade3=3). Staging was missing in most medical records, so this variable was not analyzed.

In regard to the first actions taken by the patients after awareness of the sign and symptoms: 65% of the patients looked for a physician, 18.9% started a self-treatment regimen, and 14.7% took no action. The first consultation was predominantly with a general physician (50.3%), followed by a specialist (45.5%), a general dentist (3.5%), and an oral medicine specialist (0.7%).

The mean patient delay was 161.8±380.1 days (range: 0 to 365 days, median: 60 days). Due to wide range, median (60 days) was considered. 13.3% of the patients immediately visited a physician (in the same day of noticing the sign /symptom). 30.8% saw a physician during the first month (30 days). After awareness of signs/symptoms, 21.7% consulted with a physician during one to three months and 43.3% had a delay of more than three months before seeking a physician. The patients' justification for delay is shown in figure 1.

Age was related to patient delay (P=0.002, R= 0.32). While older patients mentioned the inability to seek care by themselves as the main cause of delay (dependence to other family members) (P<0.05), younger patients considered the signs/symptoms unimportant and so failed to seek care. Other variables were not related to patient age. The sex of the patient had no effect on patient delay (P>0.05).Financial status was not related to patient delay. The education level of a patient was associated with patient delay; a higher education led to less delay (P<0.05). The area of residence affected delay as urban patients experienced less delay than rural patients. The absence of a qualified clinic in the area of residence

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caused more delay .Drug abuse by the patient was related to more delay (P=0.03).

The tumor site was related to the first presenting sign/symptom (P<0.05). Table 2 presents the predominant signs/symptoms of a tumor site. Patients themselves were aware of tumors in most tumor sites, except for those in the larynx and thyroid which other people first discovered. The first presenting sign/symptom was related to patient delay. Patients with dermatologic malignancies presented by a nevus or patch experienced the most patient delay (mean: 360 days), whereas patients with dysphagia reported the least patient delay (mean: 41 days).

Discussion:

In the present study median 60 days for patient delay was found. The majority of cases were females (58% VS 42%), while males have been predominant in most studies (11, 13, 15-19).Similar to other studies, the sex of patients was not related to delay in the current work 11,13,19-21.In some research females showed more delays in seeking care 15,18.In the Adrian study, males were in more advanced stages than the females. (22)

The mean age of patients was 51.5 (F: 48.3, M: 53.8). It was lower than the mean age in other studies, which ranged from 57 to 62 years (11, 13, 15-18, 20, 21).This may be due to the incidence of cancer among younger in our population. Age was directly related to patient delay and the causes of delay differed in the various age groups. In older patients, delay was due to their dependency on others, among younger patients, there was a lack of awareness about the importance of signs/symptoms. In most studies, age was not associated with patient delay (13-15, 18, 20).Jafari found that, although age had no linear relation with patient delay, in two age groups (<35 and ≥66) less delay was observed 14. Adrian showed that older patients were diagnosed in more advanced stages (22).

Marital status was not related to patient delay. In some studies about delay in other cancers, single patients had more delay. (23)

Financial status was not related to patient delay. In study by Baishya low family income was related to more delay in HNCs.19 In other cancers, some studies showed that lower socioeconomic status is related to more patient delay. (24) Some studies have focused on racial disparities in late diagnosis of HNCs (25), but as mentioned by Ward, these disparities are predominantly affected by socioeconomic status not biologic factors. 26 Education level was related to patient delay. The more the patient was qualified, the less the time wasted which was similar to other studies (12, 14, 19-22, 24). The area of residence affected delay as urban patients experienced less delay than rural patients.

Most patients had no special addictive habits. 7.2% were addicted to opioids, 5.2% to opioids and smoking and 4.4% were smokers. Drug abuse by the patient was related to more delay. In a study on cervical cancer in Iran, having smoker or addict husband was related to more delay. 24In most studies, majority of patients had some type of addictive habits, but no relation has been found between the habits and patient (13, 18, 20, 22).

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Squamous cell carcinoma (SCC) was the most prevalent HNC in the current work .in Baishya study , hypopharyngeal cancer(31.1%) , oral cancer (23.7%), tongue cancer (18.3%), and tonsil cancer (0.6 %) were more prevalent respectively. 19Some studies have only evaluated SCC in different parts of oral cavity (10, 11, 13).Tongue, nasopharynx, and larynx were the most involved sites. Tongue has been the most frequent site of involvement in most researches (11, 13, 18) .In contrast Shah reported buccal mucosa as the frequent site , and alveolar mucosa, the palate and retro molar pad were assumed to be concealed areas of involvement (27). The site of involvement was not related to patient delay. Baishya reported highest median delay (118 days) in cancer of tonsil and least median delay (60 days) in oral cancer19.Jafari reported that SCC of the tongue and pharynx was diagnosed later than other sites (14). Adrian found, greater tumor size in the hypopharynx region, in comparison to the oral cavity, led to advanced tumor stage 22. Abdo showed that tumors with multiple site involvements provided more delay than tumors with single site involvement (15). Peacock discovered that pharyngeal cancer had the most delay 3.Kerdpon demonstrated that tumors of the floor of the mouth were at a lower stage at the time of diagnosis (21).In Romero study, the floor of the mouth, retromolar pad, and gingiva were associated with higher stages at the time of diagnosis 13. In a mini-review by Gajda about reasons for melanoma delayed diagnosis, Hidden location which can lead to overlooking changes in appearance was a major cause of delay (23).

The first sign/symptom was a mass (36.4%), followed by pain (25.2%) and speech problems (14%). Yu had similar results (tumor, pain, and dysphagia) (18). Some studies have reported ulcer or pain as the first sign (11, 13, 22). Watson showed that in most cases the warning sign/symptom was discovered by the patient themselves, not a physician 28. In the current study, discoloration of skin was related to more delay (679.0±674.1), dysphagia was associated with less delay (41.0±55.02), and the presenting sign was related to patient delay (P=0.02). Gajda concluded that" Patients do not seek a professional help until the skin lesion significantly raise their concerns" (23).

In pharynx cancer, a sore throat was associated with more delay than dysphagia or a neck mass. Perhaps a sore throat is considered as an infectious disease and the start of related treatments leads to more delay3. Kerdpon reported less delay for ulcers(21). After a literature review, the present study concluded that the first signs/symptoms can affect delay in many ways: 1) more bothering symptoms, like a painful ulcer and dysphagia, can lead to shorter time by patients and less delay 2) symptoms which mimic benign conditions (i.e. dysphagia and discoloration) can cause more delay 3) signs/symptoms which change a patient's appearance (i.e. neck mass, asymmetry) or function (i.e. speech problems) can have less patient delay (21).

65% of the current study’s patients sought a physician after awareness of a sign/symptom whereas 18.9% initiated a self-treatment regimen and 14.9% took no action.In the

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Kerdpon study, traditional herbal treatment was related to more delay (21).

Familial history of any type of cancer was not related to delay in our study but some studies has reported a positive effect on less time wasting (19).

In most cases, a general physician was chosen for consultation followed by specialist physician and dentist. This finding is compatible with most studies in which a general physician was the first health care provider consulted (17, 18, 20, 22). Eighty one percent of the physicians referred patients to the specialists although 19% started an inappropriate intervention .Adrian reported that patients in higher stages had consulted more predominantly with nurses than head and neck specialists (22). Some researchers have calculated the number of medical visits before the definite diagnosis. For example, Kerdpon found that 2 to 50 visits were made before diagnosis21. Most studies reported less than four visits before the definite diagnosis (20, 22).

In the current work, patient delay was from 0 to 365 days with a median of 60 days. In various studies, patient delay has been reported in a wide range (3, 13, 17, 21) but mean patient delay as long as 270 days has also been reported (14, 18, 20, 22). Abdo introduced an “evaluation time” which is equal to the patient delay in the present study 15. This figure was 143 days for men and 28 days for women. Baishya used "presentation delay" and median was 90 days (7-365 days) (19).

In some studies, patients having regular dental checkups had less delay, but we did not find such result. In the current work, most patients had speculated that the signs/symptoms were not significant in their opinion (88%).However other patients mentioned financial problems, physical disabilities, and dependency on others as the main reason for their delay. In Santos study, patients (41.9%) had noted the lesion before, but the emergence of pain prompted them to admission 17. Some had not ever seen the lesion (2.7%), were in denial of the disease (18.9%) or had difficulty in seeking care(17). Peacock showed that patients who attributed the problem to dental infection or prosthesis had significantly more delay than those who had no opinion or suspected malignancy (3). The main cause of patient's delay was the thought that "the symptom was harmless or did not bother them” (3).

In general it seems that main barriers of health seeking behaviors are due to wrong perceptions of cancer signs/symptoms, anxiety of the treatment and social isolation, considering the symptoms as harmless and temporary, carelessness, vague attribution toward oral cancer, social meaning of cancer as a stigmatized and incurable illness, barriers to access to health systems, not seeing oneself at risk and mental preoccupation as shown in other cancers, may be responsible in HNCs (23, 29).

It seems that patients waste a lot of time to seek care for HNCs diagnosis and public health education must be developed to decrease patient delay and so improve the prognosis of oral cancer treatment.

Conclusion:

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The total time from patients' report of symptoms till doctor visits is comparably high in patients with head and neck cancer. Public health education must be developed and implemented to decrease patient delay time in seeking care and thus improve the prognosis of HNC patients and provide better treatment.

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Tables and Charts:

Table 1: characteristics of study population.

Variables	n	%
Gender		
Male	83	58%
Female	60	42%

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Marital status		
Married	132	92.3%
Single	11	7.7%
Area of residence		
Rural	112	78.3%
Urban	31	21.7%
Education		
Illiterate	34	23.8%
Primary school	54	37.8%
Graduate school	7	4.9%
High school diploma	30	20.9%
Higher education	18	12.5%
Insurance		
No	5	3.5%
Yes	138	96.5%
Patients habits		
Smoking	6	4.4%
Smoking+ Opium	7	5.2%
Opium	10	7.2%
No habits	112	79.3%
Not registered	8	6.7%
History of cancer in family members	121	84.6%
No	22	15.4%
Yes	• 2	• 1.6%
• Head and neck cancer	• 20	• 98.4%
• Other cancers		

Table 2: predominant sign/symptom due to site of involvement.

Site	**Predominant sign/symptom**
	Mass
Tongue	58%
Maxilla	68%
Thyroid	82%
Parathyroid	60%
Parotid	72%
Neck	62%
	Speech problem
Larynx	65%
	Nevus and Patch
Skin	80%

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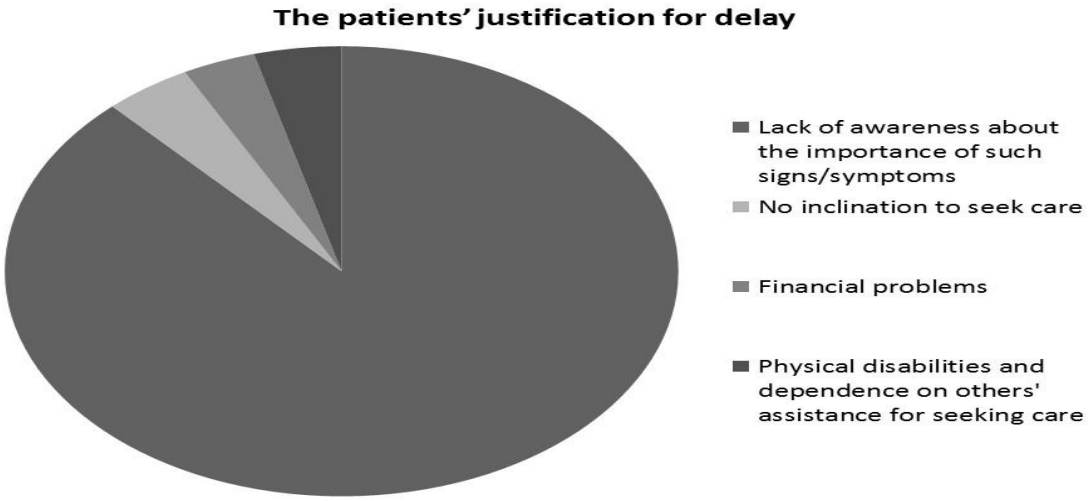
Nasopharynx	Pain 69%

Table 3: Univariate covariance analysis results for the difference between the experimental and control groups (n = 30).

Variable	Source of change	Total squares	Degree of freedom	Mean of squares	F statistic	p	Size of effect
Quality of life	**Pretest**	851.20	1	851.20	777.15	001.0	369.0
	Group membership	242.166	1	242.166	792.125	001.0	823.0
	Error	682.35	27	322.1			
Agility	**Pretest**	187.0	1	187.0	904.10	003.0	288.0
	Group membership	936.7	1	936.7	944.463	001.0	89.0
	Error	462.0	27	017.0			
Strength of lower extremity	**Pretest**	358.0	1	358.0	34.7	012.0	214.0
	Group membership	427.5	1	427.5	204.111	001.0	805.0
	Error	318.1	27	049.0			

Figures:



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