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Original Article

Investigation of clinical characteristics of head and neck skin cancer patients referred to Imam Reza Birjand Hospital from 2016 to 2020

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Abstract

Introduction: Head and neck skin cancers are the most frequent malignancies in Iran and across the globe. Skin malignancies are caused by a variety of risk factors, including sunshine and vitamin D deficiency. Despite the relatively high number of sunshine days per year in Southern Khorasan, there is insufficient research investigating skin malignancies in this province. This study aimed to characterize head skin (face/scalp) malignancies in patients admitted to the surgical ward at Imam Reza Hospital in Birjand between October 2016 and October 2020.

Methods: Ninety-nine patients with head skin cancers from Southern Khorasan province were recruited in this descriptive, cross-sectional study. The patients were diagnosed in the surgical ward of Imam Reza Hospital in Birjand from October 2016 to October 2020. The required data were collected using a checklist based on patients' files, and the data were analyzed using the Chi-square and Fisher's exact tests in SPSS software (Version. 16). The level of significance was set at $P < 0.05$.

Results: Patients with Basal cell carcinoma (BCC) and Squamous cell carcinoma (SCC) were on average 68 years and 74 years old, respectively. BCC (73.74%) was the most prevalent neoplasm, followed by SCC (23.23%) and melanoma (3.03%). The nose (28.1%), cheeks (27.1%), and scalp (19.8%) were the most frequent locations of involvement. In individuals with non-melanotic skin cancers, the mean lesion size was 12 mm in the BCC group and 23 mm in the SCC group.

Conclusion: BCC was the most common head and facial skin neoplasm. Participants did not differ significantly in terms of age and gender. The most common location of involvement was the nose. SCC lesions were significantly greater in size than non-melanotic lesions. Only one case of metastasis was found at hospital admission.

Key words: Squamous Cell Carcinoma, Basal Cell Carcinoma, Melanoma, Metastasis

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Introduction

Cancer is a prominent cause of death worldwide (1,2). Cancer-related mortality is expected to increase significantly in the near future (3). With a rising incidence rate, skin cancer is currently the most prevalent type of cancer throughout the world and the Middle East, occurring more frequently in men than in women (4, 5). According to the Iranian National Cancer Registry, skin cancer was the most prevalent type of cancer in the country between 2004 and 2008, accounting for 13.1% of cancer cases (6).

Skin cancers are classified into two types: melanotic and non-melanotic. Non-melanocytic cancers are further categorized as epithelial or non-epithelial. Basal cell carcinoma (BCC), squamous cell carcinoma (SCC), and malignant melanoma (MM) are the most frequent types of skin cancers (7). Other than melanoma, which is linked with a high mortality rate, all skin cancers tend to have a high risk of morbidity and a relatively low mortality rate (8, 9).

BCC is the most typical type of skin cancer among the elderly. SCC is the second most prevalent kind of skin cancer, whereas melanoma is one of the most lethal types of skin cancer, with an enhanced chance of survival when diagnosed early (8, 10). Indeed, melanoma leads to metastasis in over 75% of cases (11).

Multiple environmental and genetic variables contribute to cancer development (12). Sunlight is the most significant risk factor for many forms of skin cancer. Other risk factors consist of environmental risk factors, including exposure to chemicals such as ozone, polycyclic aromatic hydrocarbons, and heavy metals, as well as physical pollutants such as UV radiation, and other risk factors such as serum vitamin D levels or hair and eye color (13-15).

Iran has over 300 sunny days per year and an average of approximately 2200 kWh of solar radiation per square meter, particularly in the southern and southeastern districts of Khorasan, which have a unique capacity to receive solar energy (16-18). The head, face, and neck are particularly vulnerable to sun exposure and its associated risks, including cranial neuropathies and metastasis to other organs, such as the liver, lungs, and bones (13, 19, 20). It is vital to understand the characteristics of various forms of skin malignancies and their typical locations to plan therapy for them.

The cancer rate will likely grow soon as the average age of the population rises, infectious illnesses remain relatively well-controlled, and environmental risk factors increase. As a result, every society requires establishing a national cancer prevention and control program (21).

Additionally, alterations in lifestyle and the way various risk factors are addressed affect cancer epidemiology in various regions worldwide. Given its location in a desert region and the large number of sunny days in this province, as well as the high prevalence of skin cancers and limited and scattered epidemiological information about Southern Khorasan, this study aimed to Study the frequency of head (face/scalp) skin cancers in Southern Khorasan Province during the years 2016 to 2020.

Materials and Methods

The population consisted of patients referred to the surgical ward of Imam Reza Hospital in Birjand with a diagnosis of scalp/facial skin neoplasms. Patients were included if they had a pathology report with confirmation of neoplasm, complete patient records, and Iranian nationality.

Non-residence in South Khorasan province was the exclusion criterion. All patients diagnosed with head and face neoplasm referred to the surgery department of Imam Reza Birjand Hospital from 2016 to 2020 were included in the study.

A checklist was used to collect information on patient's demographics, including age, gender, history of skin neoplasms, family history of skin neoplasms, and clinical characteristics of patients (skin cancer status, tumor type, anatomical location of the neoplasm, and the degree of metastasis).

The information was collected based on history, the physical examination and diagnosis made by the treating physician, biopsy report, or other information in the patient's record. The anatomical locations of neoplasms were categorized as cheeks, nose, lips, chin, ears, forehead, scalp, eyelids, and canthus.

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Moreover, information concerning lesion dimensions in non-melanotic neoplasms, specified through excisional biopsy, was extracted from pathology reports. The presence of metastasis was confirmed based on diagnostic procedures and metastasis workup performed by the treating physician. The data were analyzed using the Chi-square and Fisher's exact tests in SPSS software (Version 16). The central indices and dispersion were employed to produce descriptive results.

Additionally, we used the Shapiro-Wilk test to ensure that the data distribution was normal. In this study, P-values smaller than 0.05 were considered significant. The ethics committee of Birjand University of Medical Sciences approved the present study protocol (IR.BUMS.REC.1399.378). All information obtained was kept confidential, and only anonymous information was used in reports.

Results

This study incorporated 99 patients with a mean age of 68.41±14.23 years, including 51 women (51.5%) and 48 men (48.45%). The average hospital stay was 2.38±1.3 days. Of the patients, 70.7% resided in urban areas and 29.3% in rural areas.

Four patients (4%) had no history of smoking, and none mentioned a history of consuming alcoholic beverages. Moreover, 16.2% were addicted to drugs (n = 16, including 12 oral abusers, 3 substance smokers, and one methadone abuser). Two patients (2%) had a family history of skin cancer, 11 (11.1%) had a history of skin cancer, and one (1%) had a history of head and face radiotherapy. In 57.6 percent of cases, the chief complaint and cause for referral were the formation and progression of a lesion, followed by injury in 30.1 percent of cases and bleeding in 20.2 percent of instances. Pain, non-bloody discharge, itching, burning, and the lesion's pigmentation were other complaints.

According to the results of the present study, displayed in Table 1, the most common neoplasms were BCC (73.7%), followed by SCC (23.2%), and melanoma (3.1%).

Based on the present study results, summarized in Table 2, the relative frequency distribution of gender exhibited no significant difference as per the type of neoplasm and total types of non-melanotic cancers (P=0.34). Moreover, as depicted in Table 3, the frequency distribution of the ages of patients did not correlate significantly with various types of non-melanotic skin cancers (P=0.142).

As Table 4 illustrates, that the sites of lesions in non-melanotic skin cancer types are not substantially different (P = 0.052). However, the lesion sites in non-melanotic head cancer patients differed significantly, with the highest involvement occurring in the nose, followed by cheeks and scalp (P <0.001).

The lesion size was significantly larger in SCC type than BCC type in the scalp and facial skin non-melanotic cancer patients, as revealed by excisional biopsy (P = 0.003).

In sum, one metastatic case was identified among the patients undergoing surgery, a 91-year-old woman who had SCC in the upper lip with metastasis to regional lymph nodes. Moreover, two out of 10 lymph nodes examined through biopsy were involved, which underwent radical lymphadenectomy and tumor excision.

Table 1. Frequency distribution of neoplasm types in the studied patients

Type Neoplasm	Frequency (Percent)	P-Value
SCC	23 (23.23)	P<0.001
BCC	73 (73.74)	
Melanome	3 (3.03)	

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Table 2. Comparison of the gender frequency distribution of patients by neoplasm type

Sex Type Neoplasm	Female Frequency (percent)	Male Frequency (percent)	P-Value
BCC	39 (53.4)	34 (46.6)	P=0.34
SCC	9 (39.1)	14 (60.9)	

Table 3. Comparison of the frequency distribution of lesion size (in millimeters) in patients based on excisional biopsy

Parameres	Type Neoplasm	Frequency	Q2 (Q1-3)	P-Value
lesion size	SCC	23	23 (15-30)	P=0.003
	BCC	73	12 (10-20)	
Age distribution	SCC	23	68 (56.5 – 78.5)	P=0.124
	BCC	73	74 (59 – 83)	

Table 4. Frequency distribution of the involved site according to neoplasm type

Variable	Canthus	Eyelid	Scalp	Forehead	Ear	Chin	Lip	Nose	Cheek	P-Value
BCC	4 (5.5)	2 (2.7)	12 (16.4)	4 (5.5)	(2.7) 2	3 (4.1)	1 (1.4)	24(32.9)	21 (28.8)	0.052
SCC	1 (4.3)	0 (0)	7 (30.4)	1 (4.3)	3 (13)	0 (0)	3(13)	3 (13)	5 (21.7)	
Total	5 (5.2)	2 (2.1)	19 (19.8)	5 (5.2)	5 (5.2)	3 (3.1)	4(4.2)	27 (28.1)	26 (27.1)	<0.001

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Discussion

According to our findings, the most common neoplasms in patients were BCC, followed by SCC and melanoma. Eskiizmir et al. reported that the most prevalent lesion was nasal BCC, which complies with our findings (22).

In the study conducted by Sextone et al., it was stated that the most common cancer examined in the head and neck region was SCC, which was not consistent with the study conducted by us (23). Among the reasons for this inconsistency, we can point out the difference in the geographical region, the time of the study and the locations of cancer research. The relative prevalence of scalp and facial skin malignancies did not differ substantially across genders. Consistent with our findings, the frequency distribution of neoplasms was not substantially different between male and female patients in Fijakowska et al.'s study (24).

Kang et al. found that women had a significantly greater incidence of neoplasms than men, which contradicts our findings. Several variables contribute to this mismatch, including time, geographical location, and other social factors (25).

The relative prevalence of scalp and facial skin malignancies did not differ considerably according to patient age groups. Fijakowska et al. maintained that the frequency distribution of neoplasm types was not substantially changed by patient age, which corroborates our findings (24).

In the study conducted by Kang et al., it was stated that the frequency distribution of neoplasm in women was significantly higher than in men, which was not consistent with our study. Among the reasons for this inconsistency, we can mention the difference in time, geographical area, and other social factors (25).

The nose, cheeks, and scalp were the most prevalent locations of neoplastic lesions in the present study. Kang et al. and Eskiizmir et al. noted that the most prevalent location was the nasal lesion, which is consistent with our findings (22, 25).

Lesion size was also significantly different in patients with non-melanotic skin malignancies as determined by excisional biopsy, such that individuals with SCC had a significantly larger lesion upon referral. The size of an SCC neoplasm is substantially greater than that of a BCC neoplasm, as shown in studies by Kang et al. and Eskiizmir et al., which agrees with our findings (22, 25). In accord with our findings, Fijakowska et al. discovered that the frequency distribution of tumor size varied considerably by type of neoplasm (24).

At the time of referral, one patient (1%) was identified to have metastases. Vasconcelos et al. and Silberstein et al. found that 3.3 and 1.3 percent of patients had metastasis at the time of referral, respectively, which corresponds with our research findings (26, 27).

BCC is shown to be the most prevalent scalp and facial skin tumor in similar research. While age is not particularly relevant to tumor types in the majority of studies, men tend to account for a higher percentage of patients according to the outdoor activity index. However, recent research suggests that this ratio has dropped and that men and women now have remarkably similar rates.

Even in certain studies, women represent a greater percentage, possibly owing to women's increased presence in society and longer life expectancy than men, resulting in more exposure to ultraviolet radiation (25).

Virtually all studies have found that the head and neck region has the highest incidence of skin cancers.

Furthermore, the nose has the highest cancer rate (especially in BCC). In all comparable investigations, SCC lesions have consistently been larger in size than BCC lesions, probably because of SCC's faster growth rate (25).

Ultimately, numerous studies suggest a low risk of metastasis in the non-melanotic scalp and facial malignancies and an estimated 5% rate of lymphatic metastasis in SCC (28).

Some patients who come to Imam Reza Hospital of birjand on an outpatient basis for diagnosis or treatment of skin lesions in the head and face area, do not agree to continue treatment or diagnosis process in this center or leave their diagnostic and treatment process incomplete and they do not have the necessary continuous follow-up.

Part of the study time was during the epidemic of Covid-19 disease,

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which is an additional reason for the unwillingness of the clients to complete the necessary diagnostic and treatment measures and follow up the process.

Conclusion

BCC was the most prevalent type of neoplasm. The relative distribution of scalp and facial skin cancer types did not differ substantially by gender or age. The nose was the most frequently affected site, followed by the cheeks and scalp. Lesion size varied significantly across cancer patients with non-melanotic skin lesions who had an excisional biopsy, and patients with SCC exhibited a significantly larger lesion at referral.

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Conflict of Interest

All authors declare that they have no conflicts of interest.

References

1. Afzali M, Mirzaei M, Saadati H, Mazloomi-Mahmood-Abadi SS. Epidemiology of skin cancer and changes in its trends in Iran. KAUMS Journal (FEYZ). 2013;17(5):501-511.
2. Razmjooy N, Ashourian M, Karimifard M, Estrela VV, Loschi HJ, Do Nascimento D, et al. Computer-aided diagnosis of skin cancer: a review. Current Medical Imaging. 2020;16(7):781-793.
3. Omar S, Alieldin N, Khatib O. Cancer magnitude, challenges and control in the Eastern Mediterranean Region. East Mediterr Health J. 2007;13(6): 1486-1496.
4. Devine C, Srinivasan B, Sayan A, Ilankovan V. Epidemiology of basal cell carcinoma: a 10-year comparative study. Br J Oral Maxillofac Surg. 2018;56(2):101-106.
5. Marjani A, Kabir MJ. Male skin cancer incidence in Golestan province, Iran. JJ Pak Med Assoc. 2009;59(5):288-290.
6. Nassirpour L, Maracy MR. Skin Cancer Incidence Trend in Isfahan Province, Iran, during 2004-2008. health system research(HSR). 2016;12(2):227-232.
7. Kalu NN, Johnson FM. Do CDK4/6 inhibitors have potential as targeted therapeutics for squamous cell cancers?. Expert Opin Investig Drugs. 2017;26(2):207-217.
8. Green AC, Olsen C. Cutaneous squamous cell carcinoma: an epidemiological review. Br J Dermatol 2017;177(2):373-381.
9. Kesting MR, Koerdt S, Rommel N, Mücke T, Wolff K-D, Nobis CP, et al. Classification of orbital exenteration and reconstruction. J Craniomaxillofac Trauma. 2017;45(4):467-473.
10. Brinker TJ, Hekler A, Utikal JS, Grabe N, Schadendorf D, Klode J, et al. Skin Cancer Classification Using Convolutional Neural Networks: Systematic Review. J J Med Internet Res. 2018;20(10).
11. Razi S, Rafiemanesh H, Ghoncheh M, Khani Y, Salehiniya H. Changing trends of types of skin cancer in Iran. Asian Pac J Cancer Prev. 2015;16(12):4955-4958.
12. Mohammadi M, Mirzaei M, Ahmadi A. Comparing of the Epidemiology of Skin Cancerin the Kurdistan and Yazd in 2012. Journal of Shahid Sadoughi University of Medical Sciences(JSSU) 2015;23(4):2118-2126.
13. Ames BN, Gold LS, Willett WC. The causes and prevention of cancer. Proceedings of the National Academy of Sciences. 1995;92(12):5258-5265.
14. Baudouin C, Charveron M, Tarroux R, Gall Y. Environmental pollutants and skin cancer. Cell Biol Toxicol. 2002;18(5):341-348.
15. Belbasis L, Stefanaki I, Stratigos AJ, Evangelou E. Non-genetic risk factors for cutaneous melanoma and keratinocyte skin cancers: an umbrella review of meta-analyses. J Dermatol Sci. 2016;84(3):330-339.
16. Keyanpour-Rad M, Haghgou H, Bahar F, Afshari E. Feasibility study of the application of solar heating systems in Iran. Renewable energy.

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[DOI: 10.61186/jsurgtrauma.11.3.111]

2000;20(3):333-345.
17. Hosseini SE, Andwari AM, Wahid MA, Bagheri G. A review on green energy potentials in Iran. Renew Sustain Energy Rev. 2013;27:533-545.
18. Rostamian M, Halabian AH. Calibration of earth surface received radiation in north east of Iran. Human & Environment. 2018;16(4):77-89.
19. Yoskovitch A, Hier MP, Okrainec A, Black MJ, Rochon L. Skin metastases in squamous cell carcinoma of the head and neck. Otolaryngology—Head and Neck Surgery. 2001;124(3):248-252.
20. Leach BC, Kulbersh JS, Day TA, Cook J. Cranial neuropathy as a presenting sign of recurrent aggressive skin cancer. Dermatologic surgery. 2008;34(4):483-497.
21. Norouzi Nejad F, Ramezani Daryasar R, Ghafari F. Epidemiology of cancer in Mazandaran province 2006. J Mazandaran Univ Med Sci. 2009;19(72):61-65.
22. Eskiizmir G, Ozgür E, Temiz P, Gençoğlan G, Ermertcan AT. The evaluation of tumor histopathology, location, characteristic, size and thickness of nonmelanoma skin cancers of the head and neck. Kulak Burun Bogaz Ihtis Derg 2012;22(2):91-98.
23. Sexton GP, Walsh P, Moriarty F, O'Neill JP. The changing face of Irish head and neck cancer epidemiology: 20 years of data. Eur Arch Otorhinolaryngol. 2022;279(6):3079-3088.
24. Fijałkowska M, Koziej M, Antoszewski B. Detailed head localization and incidence of skin cancers. Sci Rep. 2021;11(1):1-6.
25. Kang J, Yun B, Song J, Shin M. Non-Melanocytic Skin Cancers of the Head and Neck: A Clinical Study in Jeju Province. Arch Plast Surg. 2017;44(4):313-318.
26. Vasconcelos L, Melo JC, Miot HA, Marques MEA, Abbade LPF. Invasive head and neck cutaneous squamous cell carcinoma: clinical and histopathological characteristics, frequency of local recurrence and metastasis. An Bras Dermatol. 2014;89:562-568.
27. Silberstein E, Sofrin E, Bogdanov-Berezovsky A, Nash M, Segal N. Lymph node metastasis in cutaneous head and neck squamous cell carcinoma. Dermatologic Surgery. 2015;41(10):1126-1129.
28. Moore BA, Weber RS, Prieto V, El-Naggar A, Holsinger FC, Zhou X, et al. Lymph node metastases from cutaneous squamous cell carcinoma of the head and neck. Laryngoscope. 2005;115(9):1561-1567.

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