RESEARCH ARTICLE

Profile of Skin Biopsies and Patterns of Skin Cancer in a Tertiary Care Center of Western Nepal

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Abstract

Background: Skin biopsy is the method to assist clinicians to make definite dermatological diagnosis which further helps in holistic management. Skin cancers are relatively rare clinical diagnosis in developing countries like Nepal, but the prevalence is on rise. Objectives: To investigate the profile of skin biopsies and frequencies and pattern of skin cancers in a tertiary care centre of Western Nepal. Materials and Methods: The materials consisted of 434 biopsies (1.37%) out of 31,450 OPD visits performed in the Department of Dermatology, Manipal Teaching Hospital, Pokhara, Nepal, during the period of Dec 2011-Nov 2014. Data were collected and analyzed using SPSS-16 with reference to incidence, age, sex, race and clinical and histopathological features. Results: The commonest disorders observed in biopsies were papulosquamous lesions, skin tuberculosis of different types, benign skin tumors, leprosy, collagen and fungal diseases. Viral diseases were rarely seen, probably due to straight forward clinical diagnosis. Dermatological malignancies accounted for 55/434 (12.67%) of biopsies. Skin disorders in general were commoner in females 280/434 (64%), including malignancies 32/55(58.2%). Mean age of patients with skin cancer was 54.5 years. Facilities for proper laboratory investigation of dermatological disorders will improve the quality of life. Conclusions: The most prevalent lesion in skin biopsies was papulosquamous disorders followed by skin tuberculosis of different types. Dermatological malignancy constituted 55/434 (12.67%) cases. The prevalence of skin malignancy is on rise in Nepalese society probably due to increase in life expectancy and better diagnostic services.

Keywords: Clinicopathological correlation - skin biopsy - skin cancer - Nepal

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Introduction

The skin is the body's largest organ, having job to protect internal organs against environmental insults and maintain homeostasis. The skin is the most exposed organ to sunlight and other forms of ultraviolet rays.Skin biopsy is an essential investigation in dermatology and histopathological finding helpsclinicians to determine disease pattern as well as histomorphological correlations. Among various diseases, cancer has become a big threat to human beings globally.Cancers dominates among the leading causes of morbidity and mortality worldwide, with about 14 million new cases and 8.2 million cancer related mortalities in 2012, compared with12.7million and 7.6 million, respectively in 2008. (Ferlay et al., 2013).

There are two types of skin cancer: malignant melanoma which is less common but more serious and non-melanoma type, a common but not so serious. There is known under recording of skin cancer incidence, partly because in country like Nepal skin cancers are treated by different specialties like, surgeons, gynecologists, and so on, many skin cancers are managed in out patients' clinics, also there is no proper cancer registry. According to Skin Cancer Foundation Statistics, malignant melanoma is the 19th most common cancer worldwide, with approximately 232,000 new cases diagnosed in 2012 (2% of the total), with highest in Australia/New Zealand and lowest in South Central Asia (Ferlay et al., 2013).

Like other cancers, skin cancer is more common in elderly, but incidence of malignant melanomas is high in younger population. More than one third of all cases of malignant melanoma occur in people under 55 years of age. The most common site for men to develop a malignant melanoma is on the chest or back and for women it is the legs. Around two-thirds of malignant melanoma cases are diagnosed at the earliest stage. (Mitchell, 2013). Cutaneous melanoma (CM) rarely affects individuals of color skin, including Asians, probably due to protective effect of melanin on deoxyribonucleic acid (DNA) in the lower epidermis, as a result CM in these population occur at anatomic locations that are not usually sun exposed, like feet and usually there is delay in diagnosis (Yamaguchi et

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al., 2008; Byrd Miles et al., 2007).

Like CM, epidemiology of Nonmelanoma skin cancer (NMSC) is not well studied as well as less reported in Asians, but the incidence is on rise. Many NMSC epidemiological studies from Asia are from countries like Japan, China and Singapore, having high human development index (HDI). Countries with low HDI, like Nepal, these studies are not available. Asians as a whole are not a homogenous population, with different regions having a wide range of skin types.NMSC varies according to geographic location and latitude within countries and across the globe. Development of BCC has been correlated with prolonged, intensive UV exposure, occurring commonly after the fifth decade of life. BCC is the most common skin cancer in Caucasians, Hispanics, Chinese and Japanese (Gloster et al 2006) and people with outdoor occupations, such as farmers, fishermen, and construction workers (Bader et al, 2014), as seen in our observation where most of the skin malignancy were in farmers.A retrospective study from India reported 51.6% as NMSCs, of which 83.9% were SCC and 16.1% as BCC. (Adinarayan et al., 2011) In dark-skinned people, SCC often occurs in sites that have not been exposed to the sun and is often aggressive.SCC in heavily pigmented skin often arises in association with scarring processes, a myriad of chronic dermatoses have been associated with malignant potential for SCC(Khuller G et al., 2014). Otherwise, exposure to sunlight is the principal cause of non-melanoma skin cancer. The incidence of SCC increases faster with age and with cumulative sun / ultraviolet exposure than does the incidence of BCC (Goh et al, 2003)

Materials and Methods

The study was cross sectional from Dec 2011 to Nov 2014, at department of dermatology, Manipal teaching hospital, Pokhara, a tertiary care hospital catering a sizeable population in western Nepal. The study population included all OPD visits needing skin biopsy. A total of 434 biopsies, out of 31,450 OPD visits (1.37%), were performed. Pre designed performa were completed for each patient.Demographic Information, like age, sex,duration of symptoms before presentation and clinical characteristics of the lesions, modality of treatment, if any, various aspects of health behavior social factors were recorded. Any associated premalignant or malignant conditions as well as medical conditions were recorded. After getting histopathological report correlation was measured among clinical and histopathological diagnosis. Ethical clearance of the study was obtained.

Statistic analysis

SPSS statistical package version 16-0 was used. The data were analyzed with descriptive statistics.

Results

The socio demographic characteristics of the study population with age, sex, marital status and ethnic backgrounds are summarized inTable 1.

Out of 31,450 OPD visits, only 434 biopsies performed (1.37% of total OPD visits), the reasons could be logistic constrains and high dependence on clinical diagnosis. Dermatological malignancy constituted 55/434 (12.67%) of skin biopsies. Skin disorders in general were commoner in females 280/434 (64%), including malignancies 34/55(61%).Positive clinicopathological correlation was seen in 330/434 (76%) for all biopsies and 48/55 (87.27%) for skin malignancies. The high clinicopathological correlation might be due to open discussion between treating physicians and pathologist.Unfortunately out of four cutaneous melanomas (CM), there were missed clinically probably due to low index of suspicion. The time lag of clinical manifestation and biopsy ranged from six

Table 1. Background Characteristics of Skin Cancer Patients (n=55)

Gender	Number	Percentage
Male	23	41.8
Female	32	58.2
Religion		0.0
Hindu	40	72.7
Muslim	12	21.8
Others	3	5.5
Literacy status		0.0
Illiterate	12	21.8
Primary	10	18.2
Secondary	12	21.8
Higher secondary	16	29.1
Gtraduate and above	5	9.1
Occupation		0.0
Farmers	36	65.5
Homemakers	3	5.5
Business	12	21.8
Service	4	7.3
Residence		0.0
Rural	42	76.4
Urban	13	23.6
Current use of tobacco		0.0
Yes	37	67.3
No	18	32.7

Table 2. Pattern of Skin Diseases Diagnosed by Skin Biopsies

	Number	Percentage
Papulo squamous disorders	66	15.2
Skin tuberculosis	54	12.4
Non specific changes	43	9.9
Pigmentarydisorders	27	6.2
Eczemas	26	6.0
Benign tumors	19	4.4
Vasculitis	16	3.7
prurigo/leprosy	16	3.7
malignancies	55	12.7
basal cell carcinoma(BCC)	38	69.1
squamous cell carcinoma(SCC)	12	21.8
melanoma	4	7.3
BCC with SCC cell differentiation	1	1.8
Subcutaneous fungal infections	21	4.8
Bullous disorders	21	4.8
Connective tissue disorders	19	4.4
Drug induceddermatosis	12	2.8
Folliculitis	9	2.1
Others	13	3.0

Table 3. Types of Skin Cancers by Age

Age (years)	SCC	CM	BCC	Total
<30	1	0	0	1
30-39	0	2	5	7
40-49	3	2	5	10
50-59	3	0	8	11
60-69	1	0	11	12
70-79	4	0	8	12
>80	0	0	2	2

months to 8 years. Out of 55 skin malignancies 35 were primarily treated as benign skin lesions by clinicians other than dermatologists or by paramedics, which emphasizes the importance of skin consultations. Table: 2 show the pattern of skin diseases diagnosed. Papulosquamous disorders were seen in 60 patients. Skin tuberculosis of different type in 54 patients. Pigmentary disorders of various types in 27 patients. Eczematous changes in 26, benign tumors in 19, vacuities in 16, leprosy of different types in 16. Subcutaneous fungal infections and bullous disorders in 21 each, non-specific changes were found in 43 patients. Interestingly only seven were aware of photoprotective measures like sunscreens, shade and clothing. There were no patients with history of treatment with PUVA. Two patients with BCC had xeroderma pigmentosa. Out of 55 patients, one was on treatment for carcinoma lung and one for carcinoma prostate. Table 3 shows types of skin cancers diagnosed by age.

This study showed that reported prevalence of skin malignancy is low in western Nepal. However, due to lack of cancer registry, small number of study population and lack of guideline indicating which specialty should manage skin cancer, this finding cannot be conclusively confirmed.

Discussion

Rising incidence of skin cancer had been seen in different parts of the globe in past decades. Skin cancer, including BCC, SCC and CM are less common in color skin compared to Caucasians. However, incidence is on rise among color skin, probably due to increased ultraviolet exposure attributed to change in lifestyle and increase in life expectancy. Anyone, regardless of skin color, can be a victim. Unfortunately, we the Asians including some clinicians are under the impression that we are immune to this clinical entity. This is one reason Nepalese are diagnosed with skin cancer at later stages which means they are often advanced and have poor outcome, whereas most skin cancers are curable if managed early. The characteristics skin cancer among Caucasians as well in neighboring countries, like India and China, including demography, predilection sites, natural history, morbidity andmortality, are well documented. However, national surveys in Nepal is unavailable, there are indirect indications that incidence of skin cancer may be on the rise.

The etiology of skin cancer is multifactorial. The complex interaction among agent, host and environmental factors determines the disease process. The host factors include older age, male sex, skin type, childhood freckles/ naevi, fair skin and genodermatoses.Ultraviolet light exposure is the main environmental factor and it acts by inducing DNA mutations and immunosuppression, leading to uncontrolled growth and tumor formation (Gloster et al,. 2006).The global increase in incidence of skin cancer is probably due to more chance of sunlight exposure as a result of change in lifestyle and increase in life expectancy. It has been said that sun exposure in childhood and early adulthood starts a processof carcinogenesis that manifest 40 to 60 years later. In addition, accumulation of ultraviolet exposure is further aggravated by stratospheric ozone layer depletion. Asians diagnosed with CM were more likely to have thicker tumors with an advanced disease state at time of presentation ultimately resulting in poor prognosis. To avoid this, awareness programs should be in motion.

Skin cancer is no longer attributed solely to fair-skinned individuals. Asians and Pacific Islanders had a higher rate of thicker and distant melanomas compared to whites and Hispanics they also had lower 5-year survival rates than whites (Wu et al., 2011; Agbai et al., 2014). It was estimated that the annual incidence of BCC and SCC would increase by three and five percent respectively for every one percent reduction of the average thickness of ozone layer (Wu et al., 2011). SCC is the most frequent type of malignant tumor arising in scarred skin. In addition, the overall outcome of scar SCC poor compared to non-scar SCC (Khuller et al., 2014). Skin conditions that result in scarring or chronic inflammation, such as discoid lupus, leprosy, scars of physical/thermal trauma, burn scars and non-healing skin ulcerations are the main risk factors (Khuller et al., 2014). Alcohol too has also been linked to skin cancer risk. It has been postulated that, excess alcohol may set off a chain of reactions that makes the skin more vulnerable to cancer.Ethanol is converted to acetaldehyde which predisposes skin more sensitive to harmful UV light. Other contributory factors may too have role like, drinkers may lounge in the sun without enough protection. Excess alcohol can alter body's immune response too (Roberts, 2014). Factors related to delayed diagnosis could be either patient related or provider related. Provider related factors include a low index of suspicion, which was seen in our study, even though small in number three out of four cases of cutaneous melanoma were missed clinically. Patient-related factors include less number of dermatology clinics visits.Furthermore, clinician's promotion of skin cancer prevention/ early diagnosis and treatment strategies for all patients can help in timely diagnosis and treatment. Public education campaigns, to promote self-skin examination, emphasizing the importance of sun protection, minimizing outdoor activities in day time, and regular visit to dermatologist for early skin cancer detection if any and management will help (U.S. Preventive Services Task Force, 2014). These measures should result in reduction and or earlier detection of cutaneous malignancies. Malak et al. (2013) reported that training given to farmers regarding protection against skin cancer was found to be effective in improving knowledge and attitudes. Because of poor dermatologist patient ratio and outpatient nature, skin examination almost always occurs in shorter time. Furthermore, the guidelines for frequency of dermatologists' cutaneous examinations, particularly in

asymptomatic color skin are a topic of debate due to the lack of high quality evidence for this practice (Pollitt et al., 2009). Patients who are immunocompromised have higher risk of non melanoma skin cancer. However, in our study there were no immuno-compromised patients; the reason could be they are managed by different specialties. Skin cancers are preventable by educating general public regarding avoiding outdoor work at peak sun hour, use of clothing and umbrella along with sunscreens and many more (Baldwin, 2013).

In conclusion our study highlight that reported prevalence of skin cancer in Nepal is low and are more common in rural/agriculture population. Outdoor work leading to excess sunlight/ultra violet exposure, use of pesticides, low literacy may be contributory. The good news is that the high dose of melanin in Nepalese skin has protective role, the bad news is that we are exposed to greater levels of UV radiation. Since early detection and treatment are crucial for management, It emphasizes the importance of regular dermatological examination.

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