Skin cancer an overview

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Introduction

Skin cancer is an uncontrolled growth of abnormal skin cells. It occurs due to DNA damage which leads to mutation of skin cells and results in the formation of malignant tumors. This may be caused by sun light or UV rays and commonly occurs on the skin which is more exposed to sunlight such as the head and neck region. A brief inspection of the head and neck region for suspicious lesion could easily be done during routine examination of patient [1].

If any such suspicious lesion is present then cervicofacial lymph nodes should be further examined. When lymph node is positive then the patient should be referred to specialist for further investigation and treatment.

As early detection may result in better prognosis of the lesion, the dentist can play an important role in detecting the lesion.

There are different types of malignancies which can be clubbed under skin cancer. Three main types1 are:-

1. Basal cell carcinoma(BCC)
2. Squamous cell carcinoma(SCC)
3. Malignant melanoma.(MM)

We shall have a brief insight into the above mentioned tumors.

Basal cell carcinoma (BCC)

Among all skin cancers this is the most common type arising from basal keratinocytes of the epidermis, hair follicles and sweat ducts. It grows slowly overtime, infiltrating underlying tissue such as bone and cartilage. Metastasis occurs rarely [2].

The etiology behind BCC is UV radiation (specifically UV-B). Sunlight exposure which may acute or chronic damages DNA of skin cell (by production of oxygen and nitrogen free radicals species) causing induction of mutation in the cells[3].

Radiations such as X-ray exposure and chemicals like arsenic have also been associated with BCC. That is the reason why most cases occur on sun exposed areas such as face, neck, forearm, hands feet and legs. Intraoral lesions are rarely present[3].

Genetic inheritance of BCC is also seen in Xeroderma pigmentosun (inability to repair UV induced DNA damage),Neviod Basal Cell Carcinoma syndrome (Gorlin Goltz syndrome), which is a autosomal dominant disorder involving mutation of PTCH 1 gene. Clinically multiple aggressive BCC occur from younger age along with keratinizing odontogenic tumour, skeletal abnormalities and planter and palmer pits may be present. Other rare conditions include Bazex-Dupre Christal syndrome and Rombo syndrome[4].

Clinical features:-BCC occurs mostly in the fourth decade of life but has been reported in younger person and even among children. The male to female ratio is approximately 3:2. It is a disorder commonly seen in white individuals especially with very fair skin. It is frequently seen on areas which are exposed to sunlight like middle third of face[1].

It has 4 subtypes

A. **Nodular BCC:-**This is the most common form of BCC appearing initially as a firm red/pink painless papule which slowly enlarges and ulcerate centrally, heals over then again breaks down. One or more telangectatic blood vessels are usually seen along the border of the central depression. At this stage it is called as rodent ulcer. The lesion may bleed on very mild trauma but does not heal. Sometimes pigmented variant is also present which is caused by melanin deposition which appears tan brown black or bluish. The pigment is usually not distributed evenly[2].

B. Cystic BCC: - These lesions are translucent blue-gray cystic nodules that may mimic a benign cystic lesion[1].

C. Superficial BCC:-This variety presents a flat or raised scaly patch or papules that are pink to red brown in color. The borders are well demarcated and can be slightly raised or rolled with thread like appearance[3].

D. Infiltrating BCC:-These lesions formerly known as morpheoic or sclerosing are insidious lesions and less common than the other form .This is aggressive basal cell carcinoma and often extends well beyond clinical margins[3].

Squamous Cell Carcinoma (SCC)

This is the second most commonly occurring skin cancer worldwide and most common malignant neoplasm of the oral cavity. It is malignant epithelial neoplasm exhibiting squamous diffentiation as characterized by the formation of keratin and or the absence of intercellular bridges (Pindborg JJ et al) [5].

It is more prone to invade locally and metastasize frequently.

Pathogenesis: It is a stepwise process, where in sequential mutation of proto-oncogenes and tumor suppressor genes are required for carcinoma to be induced. UV radiation is found to be the main causative factor. Long term sunlight exposure like sun beds is mainly implicated. Human papillomavirus is also said to be an associated risk factors. Increased age and male who have higher risk are more exposed to sunlight. Organ transplantation recipients, immuno-compromised patients (through drug or disease) are at high risk. The severity increases with the degree of chronicity of immune suppression. Genetic conditions like Xeroderma pigmnetosum (inability to repair defective DNA) and oculocutaneous albinism also have high risk of SCC [6,7].

Clinical presentation:- Clinically it starts as an enlarging ulcer, lump or red patch on the skin that does not heal. Pain is usually not associated with it, but mild tenderness can be

present. If any perineural involvement is present then there can be localized pain or numbness, muscle weakness or swelling. In head and neck region cranial nerve deficits might be seen [8].

Classical presentation of SCC is seen as a raised indurated ulcer with rolled margin sometimes with an erythematous halo around the ulcer. Surface changes like scaling, crusting and horns might be present over lower lips ear pinnae, pre auricular region forehead and scalp. Lymph nodes draining from these sites like preauricular, parotid and upper cervical lymph nodes might be palpable[8].

The diagnosis of SCC is confirmed by biopsy. Histological staging is done based on the size and involvement of underlying structure and lymph nodes and presence of metastasis.

Lymph nodes which are clinically positive are biopsied by FNAC and if found positive with neoplastic cell they are removed during surgical excision. Now days assessment for metastasis may be undertaken with ultra sound, CT SCAN,MRI, positron emission tomography(PET)SCAN[9].

Malignant Melanoma

It is neoplasm of epidermal melanocytes. It is one of the biologically unpredictable and deadly neoplasms reported in humans. It is most common type of skin cancer affecting fair skinned person. It can arise within a pre existing benign melanotic lesion or from apparently normal skin [10].

UV radiation(mainly UV-) is the main risk factors. Large congenital nevi are at high risk of neoplastic transformation. Immuno-compromised patients are at high risk. Dysplastic nevus syndrome and xeroderma pigmentosum are the hereditary conditions associated with high risk of malignant melanoma [11].

Clinical features:- Malignant melanoma usually does not cause any symptoms and is noticed as a change in a pre-existing lesion or as a new lesion on skin.

The four main subtypes are

1. **Superficial:-** It comprises 70% of malignant melanoma. It is present as a flat or slightly raised lesion and can be of variety colors (brownish,grey, black ,,white blue, reddish pinkish). It is typically less than 3 cm in diameter however can grow much larger than this. The presence of induration or surface nodule with these lesions shows the degree of invasion to underlying tissue [12].
2. **Nodular:-** It comprises 15% of malignant melanoma. It is exophytic nodular lesion usually deeply pigmented may be ulcerated. It tend to grow vertically rather horizontally as shown by superficial form [12]
3. **Lentigo maligna melanoma:-** It comprises 5-10% of malignant melanoma and develops within a lentigo maligna which is an in situ melanoma occurring on sun exposed skin. It commonly occurs due to sunburn in the elderly. Clinically it is flat lesion with irregular borders and shows variety of colors. It grows slowly and gradually becomes nodular which indicates its progression to invasion to underlying tissue. The risk of conversion of lentigo maligna to malignant melanoma is not confirmed [11].
4. **Acral lentiginous melanoma:-** This type develops on the palm of the hands, soles of the feet or under the nail bed. It sometimes occurs in people with darker skin. Acral lentiginous melanoma is not related to sun exposure [11].

The following criteria aid in clinical diagnosis of melanoma (ABCDE rule)[1]:

Asymmetry-in which one half does not match other half

Border-irregular with blurred notched or ragged edges.

Color irregularity- pigmentation is not uniform. Brown black, tan, red, white, and blue all appears in melanoma.

Diameter- greater then 6mm.growth in itself is alone a sign.

Elevation-a raised surface can be sign.

Non Cancerous Growth

Certain growths are also present on skin surface with are non cancerous or pre cancerous. Knowledge of this lesion is beneficial as these lesions might not require any treatment. Few such lesions are

1. **Actinic keratosis:-** It is also known as solar keratosis. It is caused by excessive sun light exposure (exposure to UV radiation).It is asymptomatic but may cause itching and mild irritation. Clinically it is irregular scaly keratotic patch or plaque, colored from pink to gey white, sometimes with an erythymatous back ground. They can be single or multiple in number. The commonest site is face, scalp of bald men, forearm and hand. The surface appears like sandpaper. Malignant transformation to SCC ranges from 0.25 to 2.0 %.similar condition if present on lip is called as Actinic chelitis.
2. **Cutaneous horn:-** These are solitary lesion present on head and neck region and hands of older persons. They can be yellow to brown in color and composed of compact keratin resembling a horn. They can be straight or curve and can measure up to several centimeters in length.
3. **Wart:-** It is also known as verrucae. Cutaneous and mucosal lesions are present caused by human papilloma virus. It usually resolves in 6-24 months
4. **Nevus (Nevi):-** These can be congenital, but most are acquired after birth. They are also known as MOLE. They vary greatly in appearance and size. They can be flat, elevated, smooth, rough polyp like or sessile. It is important to distinguish between nevus and malignant melanoma. A symmetrical shape, regular borders uniform color and small size (diameter less then 6mm) are helpful in distinguishing it from malignant melanoma.
5. **Keratoacanthoma:-** It is skin lesion look like cancerous growth, occurring as an isolated nodule usually present on skin more exposed to sun ,like that of face. It mimic squamous cell carcinoma. It has rapid growth, more than that of SCC and healing is also very fast. It often resolves by itself and remission might occur within months.

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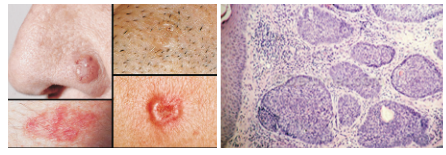

figure 1 showing clinical presentation of BCC and figure 2 showing photomicrograph of BCC

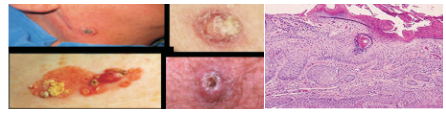

figure 3 shows clinical presentation of SCC and figure 4 shows its pictomicrograph

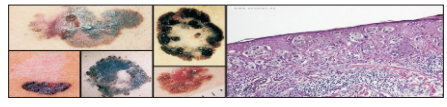

Figure 5 shows clinical presentation of Malignant melanoma and figure 6 shows picto pictomicrograph