Clinicopathological study of basal cell carcinoma over a period of nine years- from Uttar Pradesh

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Abstract

Introduction: Basal cell carcinoma is the most common type of skin cancer and occurs mostly in the head and neck region in middle age to elderly people. It has varied clinical presentation and also many morphologic/histopathologic subtypes.
Aim of the Study: To study the spectrum of basal cell carcinomas in our institute over a nine year period.
Materials and Methods: This was a prospective study carried out at Subharti Medical College, Meerut, Uttar Pradesh, over a period of nine years. All the basal cell carcinomas reported during this period were studied for clinical presentation, demographic details, anatomical location of tumor, macroscopic and microscopic appearance.
Results: A total of 28 cases of BCC were reported. The patient age ranged from 14 to 85 years and the male to female ratio was 2.1:1. Most of the cases occurred over 40 years and all the tumors occurred in the facial region. Clinically, ulcerative and nodular presentation was more common. One case of nevoid BCC syndrome was also seen.
Conclusion: Basal cell carcinoma commonly occurs in the face region and its incidence increases with advancing age. It has varied clinical presentations and histologic subtypes. Early diagnosis gives better prognosis. Basal cell carcinoma in a young person or child should be evaluated for nevoid BCC syndrome.

Keywords: Basal cell carcinoma, Histologic subtypes of BCC, Nevoid BCC syndrome.

Introduction

Basal cell carcinoma (BCC) is considered as the most common type of skin cancer (75% to 80%). Almost 80% of BCC occur in the head and neck region, followed by the trunk (about 25%), and very rarely at uncommon sites such as penis, vulva, or perianal skin (about 5%). Light-skinned and fair people are more susceptible to BCC. The population residing in equatorial areas and high altitude areas are more prone to BCC. In general, Asians and dark skinned people show low incidence for BCC.[1] Various risk factors are suspected in the causation of BCC like exposure to arsenic,[2] tar, coal, paraffin,[3] some industrial oils, radiation, burn scars[4] xeroderma pigmentosa[5] previous trauma,[6] and immune suppression.[7] By and large chronic ultraviolet radiation exposure is considered as the most important risk factor for basal cell carcinoma.[8]

Many times a shave biopsy is sufficient for the diagnosis of BCC. A punch biopsy from the lesion can also be studied especially if the shave biopsy results are negative inspite of a strong clinical suspicion of BCC.

Materials and Methods

This was a prospective study carried out in the department of Pathology, Subharti Medical College, Meerut, Uttar Pradesh, over a period of nine years from January 2008 to October 2017.

All the basal cell carcinomas (n=28) reported during this period were studied for clinical presentation, demographic details, anatomical site of tumor, macroscopic and microscopic appearance.

The specimens were received from the departments of Dermatology, Ophthalmology and General Surgery and were a mix of mostly excision biopsy specimens and a few punch biopsy specimens. The tissue was fixed in 10% buffered neutral formalin and was taken for routine histopathological processing. The sections were cut at five micron thickness, were stained with hematoxylin and eosin and were examined for light microscopy. Immunohistochemistry was used in a few cases.

Observations and Results

The patient age ranged from 14 years to 85 years. There were 19 males and 9 females and the male to female ratio was 2.1:1

Table 1 Age and gender wise distribution of the cases (n=28)

Age (in years)	Total cases (%)	Males		Females	
		No. of cases	Percentage (%)	No. of cases	Percentage (%)
11-20	1 (3.5%)	1	5.2%	-	-

21-30	-	-	-	-	-
31-40	1(3.5%)	-	-	1	11.1%
41-50	7 (25.0%)	4	21.0%	3	33.3%
51-60	5 (17.8%)	4	21.0%	1	11.1%
61-70	9 (32.1%)	6	31.5%	3	33.3%
71-80	4 (14.2%)	3	15.7%	1	11.1%
81-90	1 (3.5%)	1	5.2%	-	-
Total	28(100%)	19	100%	9	100%

Males were affected more commonly and the most number of cases of BCC were seen above 40 years.
Laterality of the lesions: The left and right side of the body were affected in 11 (39.2%) and 16 (57.1%) cases respectively. Only one case (2.8%) showed midline lesion.

Table 2 Anatomical location of basal cell carcinoma

Site	No. of cases	Percentage (%)
Forehead	3	10.7%
Cheek	7	25.0%
Upper eyelid	5	17.8%
Lower eyelid	5	17.8%
Nose	3	10.7%
Ala of nose	1	3.5%
Lip	1	3.5%
Posterior auricular region	3	10.7%
Total	28	100%

One case of Nevoid BCC syndrome was seen in a 66 year old male patient who had multiple BCCs on the back and face region (right lower eyelid)
Gross morphology of basal cell carcinoma: Out of 28 cases, Ulcer was seen in 15 (53.5%) cases, Nodular lesion was seen in 10 (35.7%) cases and as Fungating mass was seen in 3 (10.7%) cases.

Table 3: Histopathological type of basal cell carcinoma

Histopathology	No. of cases	Percentage (%)
Conventional	16	57.1%
Nodulo-cystic type	4	14.2%
Adenoid cystic type	3	10.7%
Squamous differentiation	3	10.7%
Nevoid BCC type	1	3.5%
Pigmented type	1	3.5%
Total	28	100%

The conventional type was most common on histopathological examination accounting for 16 (57.1%) cases.

Discussion

In the present study 28 cases of Basal cell carcinoma were studied.

Age and gender distribution: BCC incidence increases with increasing age; about 5% to 15% of BCC cases occur in patients aged 20 to 40 years, and the incidence is more than 100-fold in persons aged 55 to 70 years than in those aged 20 years or younger.[1] Although it can occur at any age, the incidence of BCC increases markedly after the age of 40.[9] BCC is exceptionally seen in children and young adults.[10] In our study, 1 (5.2%) cases were seen in the younger age group of 11-20 years. Wong et al have reported a male-to-female ratio of approximately 2.1:1.[1] The slightly higher incidence in males is thought to be due to occupational sun exposure. Our study also had a male to female ratio of 2.1:1 and compares well with the observation of above authors.[1, 9]
For tumors involving the periocular skin, Cook et al reported the incidence of BCC to be equal in men and women.[11]
Anatomical location: The most frequent location of basal cell carcinoma is in the head and neck region. It occurs most commonly on the face[12] and also on the nose, especially the tip of the nose and the nasal alae, these sites accounting for almost 85% cases. The next common sites are the trunk and extremities-15%. Very rarely it can occur on the penis[13] vulva,[14] or perianal skin. Axillary BCCs are also reported though uncommonly and have a prevalence of about 0.17%.[15] In our study also the most common site was the facial area. In fact all the cases (100%) occurred in the face region except one case of Nevoid BCC syndrome who had right lower eyelid BCC and also multiple BCCs on the back.

BCCs are known to occur at the embryonic fusion planes and their occurrence at embryonic fusion planes is four times more likely as compared to other regions such as midface, etc. Hence, an embryologic role in the development of BCC is strongly suspected.[16]

The eyelids represent a particularly susceptible region for eyelid tumours, and approximately 90% of all eyelid cancers are BCCs.[17] On the contrary primary squamous cell carcinomas of the eyelids are only about 9%. Among the periocular BCCs most commonly affected areas are the Lower eyelid (48.9-72.1%) followed by Medial canthus (25-30%) followed by Upper eyelid (15%) and least affected site is the Lateral

canthus (5%). In our study the upper and lower eyelid areas were affected in equal number of cases.[18]

Macroscopic appearance: Many clinical variants have been reported in the literature such as the nodular variant, ulcerated type, pigmented type, fibroepithelioma of pinkus, superficial spreading type, cystic type, infiltrated type, morpheaform type etc.[19] In our study, the most common clinical presentation was that of a non-healing ulcer on the face seen in 15 (53.5%) cases.

Also recently described is the "Red dot basal cell carcinoma" which is a unique variant of basal cell carcinoma. Very few cases have been reported of this variant and all the patients were above seventy years. BCCs do not blanch on diascopy but this particular variant may show blanching and cause delay in the diagnosis.[20]

Microscopic appearance: Many microscopic types have been reported in the literature such as the superficial type, basosquamous/metatypical type, granular BCC, clear cell BCC, infundibulocystic BCC, fibroepithelial tumor of Pinkus and sarcomatoid BCC,[21] pigmented type, cystic type and morpheaform type BCC.[19] In the present study 53.5% cases showed the conventional or routine histologic appearance for BCC. The variant histologic subtypes were rare. Squamous differentiation i.e keratotic areas in BCC were encountered in 3 (10.7%) cases. This has to be differentiated from the basosquamous/metatypical BCC where the squamous elements show atypical features and confer a more aggressive behavior and metastatic potential to these tumors.[22]

The Microscopic appearance of Nevoid BCC is histologically similar to sporadic BCC.A histologic clue that is suggestive of Nevoid BCC is the finding of multiple minute buds of early superficial BCC in normal adjacent skin of excision tissue of BCC. Also admixture of different histologic patterns of BCC is common in Nevoid BCC.[23]

Nevoid basal cell carcinoma syndrome: Also known as Gorlin syndrome is characterized by multiple BCCs, palmar pits, keratocysts of the jaw, central nervous system abnormalitieswith dural calcifications, skeletal anomalies and endocrine defects.[21] Rahbari et al[10] observed in their study that 2% of patients less than 45 years of age with basal cell carcinomas have this syndrome. In our study, there was a single patient (3.5%) who was diagnosed on histopathology as Nevoid BCC. On further evaluation he was found to have some of the symptoms associated with Gorlin's syndrome. He also gave a positive family of an elder brother having similar symptoms and also an eighteen year old son with features suggestive of Gorlin's syndrome who was under evaluation for the same. The patched/hedgehog intracellular signaling pathway is implicated in both sporadic BCCs and nevoid BCC syndrome (Gorlin syndrome). Mutations in the PTCH 1 (PATCHED) (patched) gene on chromosome 9q22.3 are of particular interest in causation of BCC.

Genetic testing was advised for our patient and also for his family members if possible but could not be done due to cost constraints. However, immunohistochemistry was performed for this patient of Nevoid BCC considering trichoepithelioma as a close histologic differential. The distinction between the two entities is very important as BCC is a malignant tumor and trichoepithelioma is a benign lesion. Immunohistochemistry was done for Bcl2, CD10 and CD34. In BCC, immunostaining for bcl-2 is diffuse whereas, it is peripheral in trichoepithelioma. CD34 is more positive in the stroma of trichoepithelioma than BCC and absent in tumor cells of both tumors. In BCC, CD10 stains the epithelial tumor cells, whereas, in trichoepithelioma CD10 stains the stromal cells.[24] Our IHC results favoured a diagnosis of BCC.

Clinical behavior: The prognosis of BCC is excellent, with a 100% survival rate for cases that have not spread to other sites. Basal cell carcinomas are slow to develop and very rarely metastasize. The incidence of metastasis in BCC ranges from 0.0028% to 0.55%.[25] Inspite of low metastatic potential it is very important to have an early diagnosis because most of these tumors; almost 75%; occur on the face, and head and neck region. BCCs are locally invasive and can cause significant cosmetic disfigurement in these areas, destruction of vital structures and also are not amenable to extensive surgical resections in face region.[26] A few of our cases were followed up for some time. None of them had any metastasis. Most of the cases were lost to follow up. Snow et al[27] used the data at Moh's Surgery Clinic and observed that BCCs more than 3 cm in diameter had a metastatic incidence of 1.9% and also that larger lesions of stage T3 or T4 should be followed up for a minimum of ten years for delayed metastasis. The most common sites of metastasis are the lymph nodes and lungs.[28]

Various treatment modalities are available for BCC and treatment is curative in about 95% of cases. Despite treatment, recurrences are known to occur especially in the first year, or it may develop in new sites. So for this very reason, regular dermatological screenings are recommended.[29]

Treatment Modalities: Many treatment modalities are available for BCC but surgery is considered the "gold standard" for the treatment of vast majority of BCC. Surgical excision provides tissue specimen for complete histological analysis; gives a lower recurrence rate and also bestows a better cosmetic result. Mohs surgery is the treatment of choice for larger or recurrent and high risk lesions. Curettage and cautery are preferred for smaller BCCs. Radiotherapy is preferred in the elderl and for BCCs located on the head. Cryotherapy is used for very small lesions but gives a poor cosmetic result. Laser treatment is still under research. For smaller superficial lesions topical imiquimod, 5-fluorouracil and photodynamic therapy (PDT) can be used.[9] The

choice of treatment depends on the age of the patient, exact location and size of the tumor, presence of invasion, risk of recurrence etc. Inspite of adequate treatment long term follow is strongly advisable.

Conclusion

Basal cell carcinoma commonly occurs in the face region, its incidence increases with advancing age and it has a male preponderance. It has varied clinical presentations and histologic subtypes. Early diagnosis gives better prognosis. Multiple basal cell carcinomas in an individual should prompt further evaluation for nevoid BCC syndrome.

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