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Metachronous Dual Malignancy in an Indian Albino

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Oculocutaneous albinism (OCA) is the most common inherited pigmentary disorder of the skin which is associated with impaired melanin biosynthesis. Clinical features of OCA are decreased pigmentation of the skin, hair, and eyes. The absence of melanin increases the risk of these patients to ultraviolet rays induced malignancies. Basal cell carcinoma (BCC) and Squamous cell carcinoma (SCC) are the most common malignancies associated with OC and have been rarely reported. Metachronous malignancies in the OCA have not been reported in the literature. We report one such rare case of Metachronous Basal Cell Carcinoma of the skin and Squamous cell Carcinoma Lung in an Indian Albinism Patient.

Keywords: Oculocutaneous Albinism; Melanin; Skin Carcinoma; Genetic Disorder.

1. INTRODUCTION

Albinism is a disease of pigmentation associated with decrease in the melanin pigment or the absence of melanin in the skin, hair, and eyes. Prevalence of OCA is estimated to be one in 20,000 individuals across the world. It is an autosomal recessive disorder of melanocyte

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differentiation due to defects in the pathway of melanin production. Mutations in tyrosinase (TYR) gene, resulting in impaired tyrosinase activity, are by far the most common cause and affect up to 50% of cases [1-2]. Ocular features associated with albinism include nystagmus, photophobia and decreased visual acuity. Lack of melanin predisposes these patients to a cutaneous malignancy. Actinic keratosis progressing to squamous cell carcinoma (SCC) is the most reported skin cancer. OCA increases the risk to squamous cell carcinoma of the skin, mainly in the sun-exposed areas of the body [3,4]. It is aggressive and tends to have a higher rate of recurrence [5,6-8]. The risk for basal cell carcinomas (BCC) is also higher in these patients as compared with normal population [9]. Metachronous malignancies in Albinism patient have not been reported in the literature. Here we report a case of Indian albino with metachronous dual malignancies with different histology.

2. CASE PRESENTATION

A 30-year-old Indian man, with a prior diagnosis of OCA, was presented to the outpatient department of our hospital in 2017 with complaints of a slow-growing, locally invasive nodular lesion on his upper back. He had a history of multiple flat, patches on the skin since childhood. The patches on the back progressed into a pigmented, raised ulcer. Personal and family histories were non-contributory. On examination, the patient was in good 'general performance' status, score 1 according to Eastern Cooperative Oncology Group (ECOG). Vital signs were normal. There was an irregular, pigmented, raised, and indurated ulcer on the back measuring 4 cm × 5 cm. There were no palpable lymph nodes in the neck or axilla. Base-line blood tests were normal. Histology of the lesion confirmed cutaneous Basal cell carcinoma. There was no clinical evidence of systemic metastasis. He underwent surgical excision of the tumour with negative margins without any adverse risk factors, and post-operative period was uneventful. He was under regular follow-up. One year later in 2018 he was presented with axillary Lymph-node swelling, Biopsy of the lesion suggestive of axillary metastasis and biopsy of it revealed basal cell carcinoma. He underwent axillary dissection with adjuvant radiotherapy. He was kept on regular follow-up. In January 2021, he was presented with complaints of cough for 2 months and loss of weight. CT scan of the Thorax revealed lobulated mass lesion in the central region with endoluminal growth into the intermediate bronchus. CT guided biopsy of the lesion revealed squamous cell Carcinoma. Patient and his attenders wanted to take the treatment in at his hometown and hence he was referred for the further management.

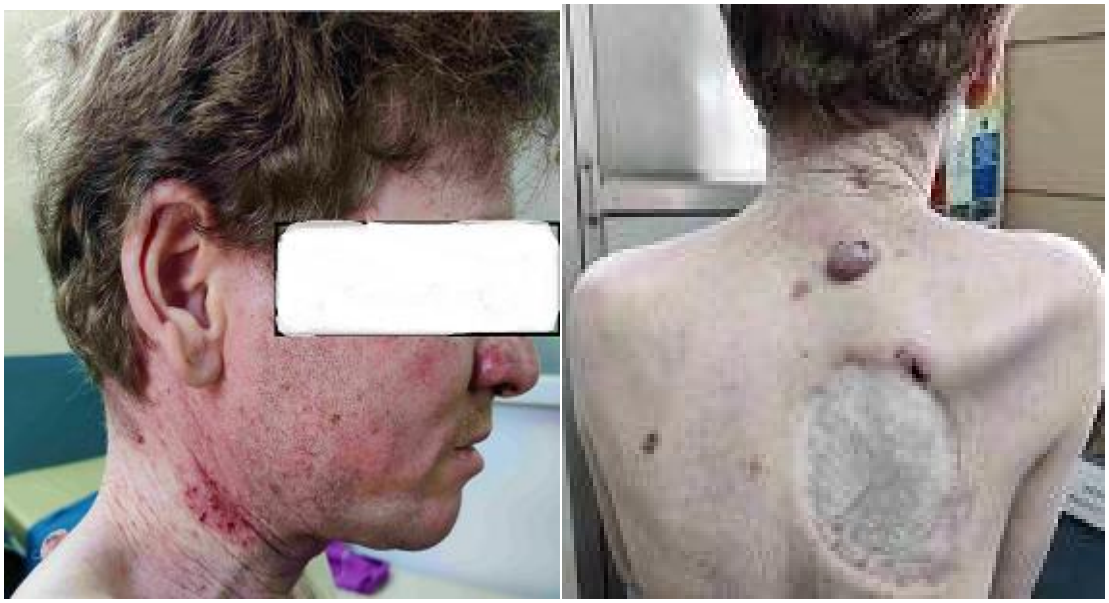

Fig. 1 and 2. Clinical presentation of the patient. multiple papular lesions of 5 mm to 4 cm in size, which involved the face, neck and back. Operated site of the Lesion for Basal Cell Carcinoma

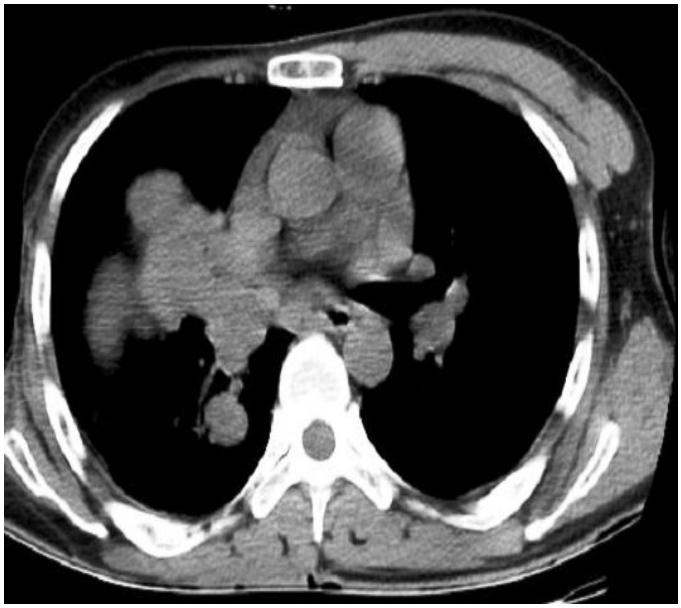

Fig. 3. Mass Lesion seen in the CT scan of the Thorax

3. DISCUSSION

OCA is an autosomal recessive genetic disorder associated with mutations in a different group of genes. It occurs with a prevalence of 1 in 20,000 globally. Specific genes get mutated OCA are TYR, OCA type 2, tyrosinase-related protein 1 gene (TYRP1), and SLC45A2 protein gene, that are required for melanin synthesis [10]. TYR gene encodes for tyrosinase and is the most common mutation seen in Indians [1-2]. Type 2 OCA is more common in the African population [11].

Albinism patients are highly sensitive to actinic damage (UV light exposure) due to melanin deficiency. Degree of skin pigmentation is inversely correlated with the risk of sun-induced skin cancers [12]. The cutaneous problems that occur in OCA patients are sunburns, basal cell carcinoma, malignant melanoma, dysplastic nevus syndrome and, the most common of all, Actinic Keratosis (AK) that are predisposed to SCC. AKs are a clinical manifestation of UV radiation (most commonly UV-B radiation)-induced malignant transformation of keratinocytes [13].

As most persons with severe forms of OCA are prone to sunburn [14], the progenitor basal cell keratinocytes of sun-exposed skin of albinos are at great risk of undergoing sunlight-induced malignant transformation. SCC of skin in albinos can arise de novo or from premalignant actinic lesions such as sunlight keratosis, in which the keratinocytes have already undergone sunlight-induced initial transformation. The basal cell keratinocytes will sustain DNA damage of different degrees of severity according to the intensity and duration of exposure to sunlight. In normal population, the p53 gene arrests the cell cycle, allowing for the repair of the damaged DNA, or promotes apoptosis if the DNA damage not repairable. However, if sunlight induces mutations in p53 itself making it dysfunctional, resulting in a pre-cancerized epithelial field composed of a clone of initially transformed keratinocytes with genomic instability. This genomic instability predisposes the initially transformed keratinocytes to additional genetic alterations and may drive the processes of clonal divergence with consequent clonal expansion of keratinocytes possessing a selective growth advantage, ultimately giving rise to a SCC of skin [15-17]. The risk of SCC of skin is directly proportional to the quantum of UV Rays absorbed by the keratinocytes [18], but ultimately the potential for malignant change is determined by the number of genetic insults. Therefore, numerous smaller frequent exposures to sunlight are carcinogenic than greater but infrequent exposures [19].

Clinical features of OCA are hypopigmentation of the hair, skin and nail. Eye manifestations are nystagmus, strabismus and retinal

hypopigmentation, decreased visual acuity, and photophobia [3]. Patients with OCA1 present with white skin and hair, blue to pink translucent iridis, decreased visual acuity, and severe photophobia. Pigmented skin lesions such as nevi and freckles are relatively more common in OCA2. The patient described above had pigmented skin and hair, grey iris and pigmented skin lesions. Although his vision was not severely impaired, he had severe photophobia. This picture fits with the OCA2 type, but genetic testing was not feasible due to his low economic status.

Ultraviolet radiations, mainly ultraviolet B rays, induce carcinogenic mutations in deoxyribonucleic acid (DNA) that are reported in over 50% of cases of SCC and BCC [20]. There are few case reports that have described the synchronous occurrence of more than one type of skin malignancy in individuals with OCA. Chatterjee et al. reported the case of an Indian albino who presented with concurrent BCC and actinic keratosis, a precursor of SCC [14]. However, In Review of Literature we did not find any albinism patient having metachronous dual malignancy. Hence, we report a patient with a prior diagnosis of OCA, presenting with a grossly pigmented malignant skin lesion which turned out to be basal cell carcinoma, later he developed metachronous squamous cell carcinoma of the lung.

4. CONCLUSIONS

OCA predisposes patients to ultra-violet rays induced cancers. This case reported because of its rare occurrence. It depicts the rare occurrence of non-melanoma skin cancers along with metachronous squamous cell carcinoma lung. We opine that regular examination of all albinos for early detection and treatment of various malignant lesions is important. Albinos presenting with cutaneous malignancies must be subjected to extensive evaluation for other cancers as well.

CONSENT AND ETHICAL APPROVAL

This study was approved by the Institutional Ethical Committee and Consent from the patient has been taken for Publication.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Simeonov DR, Wang X, Wang C, et al. DNA variations in oculocutaneous albinism: an updated mutation list and current outstanding issues in molecular diagnostics. Hum Mutat. 2013;34:827-35. DOI: 10.1002/humu.22315
2. Chaki M, Sengupta M, Mukhopadhyay A, et al. OCA1 in different ethnic groups of India is primarily due to founder mutations in the tyrosinase gene. Ann Hum Genet. 2006;70:623-30. DOI: 10.1111/j.1469 1809.2006.00247.
3. Mabula JB, Chalya PL, Mchembe MD, et al. Skin cancers among Albinos at a University teaching hospital in Northwestern Tanzania: a retrospective review of 64 cases. BMC Dermatology. 2012;12. Article 5.
4. Mapurisa G, Masamba L. Locally advanced skin cancer in an albino: a treatment dilemma," Malawi Medical Journal. 2010;22(4)122–123.
5. Castori M, Morrone A, Kanitakis J, Grammatico P. Genetic skin diseases predisposing to basal cell carcinoma," European Journal of Dermatology. 2012; 22(3):299–309.
6. Berger E, Hunt R, Tzu J, Patel R, Sanchez M. Squamouscell carcinoma in situ in a patient with oculocutaneous albinism. Dermatology Online Journal. 2011;17(10): 22.
7. David CV. Oculocutaneous albinism," Cutis. 2013;91(5):E1–E4.
8. Yakubu A, Mabogunje OA. Skin cancer in African albinos. Acta Oncologica. 1993; 32(6):621–622.
9. Grønskov K, Ek J, Brondum-Nielsen K: Oculocutaneous albinism. Orphanet J Rare Dis. 2007; 2:43. DOI: 10.1186%2F1750-1172-2-43
10. Kamaraj B, Purohit R: Mutational analysis of oculocutaneous albinism: a compact review. Biomed Res Int. 2014, 905472. DOI: 10.1155/2014/905472
11. Stevens G, Ramsay M, Jenkins T: Oculocutaneous albinism (OCA2) in sub-Saharan Africa: distribution of the common 2.7-kb P gene deletion mutation. Hum Genet. 1997;99:523-7.

12. Manga P, Kerr R, Ramsay M, et al. Biology and genetics of oculocutaneous albinism and vitiligo: common pigmentation disorders in southern Africa. S Afr Med J. 2013;103(12 Suppl 1):984–988.
DOI: 10.7196/samj.7046.
13. Ramalingam VS, Sinnakirouchenan R, Thappa DM. Malignant transformation of actinic keratoses to squamous cell carcinoma in an albino. Indian J Dermatol 2009;54(1):46–48.
DOI: 10.4103/0019-5154.48986.
14. Grønskov K, Ek J, Brondum-Nielsen K. Oculocutaneous albinism," Orphanet Journal of Rare Diseases. 2007;2(1): Article 43.
15. Wood NH, Khammissa R, Meyerov R, Lemmer J, Feller L. Actinic cheilitis: a case report and a review of the literature," European Journal of Dentistry. 2011;5(1): 101– 106.
16. Feller L, Khammissa RAG, Wood NH, Jadwat Y, Meyerov R, Lemmer J. Sunlight (actinic) keratosis: an update. Journal of Preventive Medicine and Hygiene. 2009; 50(4):217–220.
17. Feller LL, Khammissa RRAG, Kramer BB, Lemmer JJ. Oral squamous cell carcinoma in relation to field precancerisation: pathobiology," Cancer Cell International. 2013;13(1). Article 31.
18. Andreassi L. UV exposure as a risk factor for skin cancer. Expert Review of Dermatology. 2011;6(5):445–454.
19. Kollias N, Sayre RM, Zeise L, Chedekel MR: Photoprotection by melanin. J Photochem Photobiol B. 1991;9:135-60.
20. Chatterjee K, Rasool F, Chaudhuri A, Chatterjee G, Sehgal VN, Singh N. Basal cell carcinoma, oculocutaneous albinism and actinic keratosis in a native Indian. Indian J Dermatol. 2013, 58:377-9.
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