

Two Unusual Tumours in a Patient of Xeroderma Pigmentosum: Angiosarcoma and Basosquamous Carcinoma

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Abstract

Xeroderma pigmentosum (XP) is a rare form of genodermatosis, characterized by cutaneous pigmentary changes, sensitivity to light and development of multiple cutaneous and internal malignancies at an early age as a result of nucleotide excision repair defect after ultraviolet light exposure. Cutaneous angiosarcomas are angry neoplasms that are rarely associated with XP. In this communication, we report the case of a 22-year-old male patient with XP who developed an angiosarcoma of the face and a basosquamous carcinoma at one time. It is probably the first such case reported from Pakistan.

Introduction

Xeroderma pigmentosum (XP) is a rare genodermatosis. It is a genetically heterogeneous, autosomal recessive disorder which is characterized by cutaneous pigmentary changes, sensitivity to light, development of multiple cutaneous and internal malignancies at an early age and premature skin aging.¹ In this infrequent human cancer syndrome, germ line mutations of genes implicated in nucleotide excision repair predispose XP patients to skin cancers after exposure to UV light.²

Cutaneous angiosarcomas are angry looking neoplasms. They develop in three distinct clinical settings: i) following long-standing lymphoedema, ii) sporadic (involving scalp, neck and face regions of elderly patients) and iii) post irradiation.¹ While patients of XP develop numerous cutaneous malignancies during their lifetime, cutaneous angiosarcomas are exceptionally infrequent and only five previous cases have been described in literature.^{1,3-6} We report first such case from Pakistan. Our patient also had a simultaneous basosquamous carcinoma at another site.

Case Report

A 22-year-old male presented with an ulcerated lesion on the right side of scalp for 6 months and another ulcerated lesion on chin. According to the patient, the scalp lesion appeared after an accidental hit to a wall that occurred 6 months ago. He had already been diagnosed with Xeroderma pigmentosum clinically, although no special investigations done because of non-availability. The disease was diagnosed at 8 years of age when freckles and areas of hyper-pigmentation appeared all over the body. There is history of consanguinity in the family. He also has one living, affected brother and one maternal female cousin who had died at the age of 14 years.

On examination, his right eye had been exenterated 6 years back because of a lesion about which no documentation was saved. The left eye only had light perception. The laboratory investigations showed that he was previously anaemic with hemoglobin level of 7.2 g/dl and the level has now improved to 10.0g/dl after transfusion and iron therapy. Other routine investigations were in normal range.

The lesion from scalp was an ulcerated lesion measuring 4.5×4.0 cm. Its histological examination revealed a poorly demarcated lesion underneath the ulcerated skin consisting of neoplastic vascular channels that were irregular in shape and freely intercommunicating with one another in a sinusoidal manner (Figure 1). The lining cells were often showing pleomorphism and hyperchromatic nuclei. In some areas, the vessels were dissecting through the dermal collagen. In some other areas, the vessels were lined by a single attenuated layer of neoplastic endothelium while in other areas the vascular channels had a lining of a neoplastic endothelium forming intraluminal

buds, projections or papillae. There were also areas of hemorrhage, disordered architecture, and large cells with hyperchromatic, pleomorphic nuclei. Mitotic activity was occasional. On these findings, the diagnosis of angiosarcoma was made. All excised margins except one were free of tumour.

The second lesion from chin measuring 2.0x1.0cm revealed on histological examination a neoplastic lesion showing islands of atypical basaloid cells with occasional peripheral palisading. There were distinct areas of squamous differentiation with malignant cells having more abundant cytoplasm and more marked keratinization as well (fig 2). The diagnosis of basosquamous carcinoma was made. All the excised margins were free of tumour.

| Table 1 - Reported cases of Xeroderma Pigmentosum Patients with Angiosarcoma | | |
|--|-----------|---------------|
| Authors | Age/Sex | Site |
| Leake, et al.1992 [5] | 15 yrs/ F | Scalp |
| De Silva, et al. 1999 [6] | 63 yrs/ M | Cheek |
| Ludolph-Hauser, et al. 2000 [4] | 13 yrs/ F | Leg |
| Marcon, et al. 2004 [3] | 15 yrs/ M | Nose |
| Arora, et al. 2008 [1] | 40 yrs/ M | Right eyebrow |
| Present case | 22 yrs/ M | Scalp |
| F= female; M=Male | | |

Discussion

XP is present worldwide and has a prevalence of about 1:1,000,000 in the U.S and Europe.⁷ While an average frequency of XP in the southern region of Pakistan is estimated to be about 1:100,000.⁸ XP has an intricate genetic basis and a complex pathophysiology. Indisputable facts accumulated over the last 20 years have shown that the failure of XP cells to mend UV light-induced DNA lesions result in high mutation levels which when amassed in key regulatory genes, leads to malignant transformation of cells, ultimately resulting in skin cancer.⁹ Cutaneous angiosarcomas merely account for approximately 1% of all malignant mesenchymal tumors and hence are rare. Head and neck are the most common locations of occurrence. Morphologically, these are composed of vascular channels lined by atypical and pleomorphic endothelial cells. They display varying levels of differentiation from well to poorly appreciable forms within the same lesion. This may lead inaccurate

prediction of prognosis based on histological features alone.¹

Development of angiosarcoma with XP has been thought to be a result of UV-induced damage as happens in other malignancies in these patients. Additionally, cutaneous angiosarcomas arising from the abnormal ectatic vessels present in telangiectatic lesions have also been suggested.⁵ It is also a known complication in patients who are exposed to ionizing radiation such as patients undergoing radiation therapy for other cancers.¹ However in our case, neither did the patient give any history of exposure to ionizing radiations nor had he any telangiectatic lesion in vicinity of angiosarcoma or elsewhere.

Although numerous skin and internal malignancies have been reported in patients of XP, angiosarcoma has been described very rarely.^{1,3-6} This association was first reported by Leake, et al. in 1992.⁵ After that four more cases have been described in literature.^{1,3,4,6} Here we communicate first such case from Pakistan.

References

1. Arora R, Sharma A, Gupta R, Vijayaraghavan M. Cutaneous angiosarcoma in a patient with xeroderma pigmentosum. *Indian J Pathol Microbiol* 2008; 51: 504-6.
2. Lehmann AR. DNA repair-deficient diseases, xeroderma pigmentosum Cockayne syndrome and trichothiodystrophy. *Biochimie* 2003; 85: 1101-11.
3. Marcon I, Collini P, Casanova M, Meazza C, Ferrari A. Cutaneous angiosarcoma in a patient with xeroderma pigmentosum. *Pediatr Hematol Oncol* 2004; 21: 23-6.
4. Ludolph-Hauser D, Thoma Greber E, Sander C, Sommerhoff CP, Rocken M. Mast cells in an angiosarcoma complicating xeroderma pigmentosum in a 13 year old girl. *J Am Acad Dermatol* 2000; 43: 900-2.
5. Leake J, Sheehan MP, Rampling D, Ramani P, Atherton DJ. Angiosarcoma complicating xeroderma pigmentosum. *Histopathology* 1992 ; 21:179-81.
6. De Silva BD, Nawroz I, Doherty VR. Angiosarcoma of head and neck associated with xeroderma pigmentosum variant. *Br J Dermatol* 1999; 141:166-7.
7. Kleijer WJ, Laugel V, Berneburg M, Nardo T, Fawcett H, Gratchev A, et al. Incidence of DNA repair deficiency disorders in Western Europe: Xeroderma pigmentosum, Cockayne syndrome and trichothiodystrophy. *DNA Repair (Amst)* 2008; 7(5): 744-50.
8. Bhutto AM, Shaikh A, Nonaka S. Incidence of xeroderma pigmentosa in Larkana, Pakistan a 7-year study. *Br J Dermatol* 2005; 152: 545-51.
9. Daya-Grosjean L, Sarasin A. The role of UV induced lesions in skin carcinogenesis: an overview of oncogene and tumor suppressor gene modifications in xeroderma pigmentosum skin tumors. *Mutat Res* 2005; 571(1-2): 43-56.