Clinics of Oncology

Case Report ISSN: 2640-1037 | Volume 6

Massive Presentation of a Neglected Basel Cell Rodent Ulcer on the Forehead and Outcome with Radiation Rherapy and Literature Review

Iska S and Sokol GH*

Uniformed Services University of the Health Sciences, Bethesda, Maryland

***Corresponding author:**

Gerald H Sokol,
Uniformed Services University of the Health Sciences, Bethesda, Maryland,
E-mail: geraldhsokol@gmail.com

Received: 20 Dec 2022
Accepted: 23 Jan 2023
Published: 03 Feb 2023
J Short Name: COO

Citation:

Sokol GH. Massive Presentation of a Neglected Basel Cell Rodent Ulcer on the Forehead and Outcome with Radiation Rherapy and Literature Review. Clin Onco. 2023; 6(18): 1-4

Keywords:

SMOm; Calvarium; Radicles

1. Abstract

Basal cell carcinoma of the scalp is the most common cancer of skin which is locally invasive. The patched/hedgehog intracellular signaling pathway is responsible for regulating cell growth and tumor forms by inactivating mutation in PTCH1 or activating mutation of SMOm. BCC can cause significant morbidity from local destruction if neglected. The risk of metastasis and death is 6.5% in tumors greater than or equal to 2cm in size. The gold standard treatment is surgical excision. Radiation therapy is used to treat skin cancers as an adjuvant or in patients not candidates for surgical intervention or who refused therapy. It works by using low-energy x-rays or electron beam radiation. They work on superficial skin and do not affect the organs deeper. Here, a case of a man presenting with an unwitnessed seizure who was found to have a large ulcer on his forehead which was later diagnosed to be a basal cell carcinoma of the scalp eroding the calvarium. The base of the ulcer was the patient's dura and brain. He was successfully treated with electron beam radiation therapy for 6 weeks with careful preservation of brain tissue. The patient's skin was re-epithelialized and bone re-calcified. The Ulcer on the forehead has completely regressed. This case and literature review illustrate the importance of Radiation therapy and its potential to be the first line and only treatment for basal cell carcinoma. This case proves that if aggressive tumors are treated, then Basal cell carcinoma with initial presentation will have even better prognosis. Multimodality treatment with a Radiation oncologist, dermatologist, and medical oncologist can save patients from devastating outcomes.

2. Introduction

Basal Cell Carcinoma (BCC) is the most common cancer in Caucasians with the incidence rising by 4% to 8% annually [1]. The patched/hedgehog intracellular signaling pathway is responsible for regulating cell growth and tumor forms by inactivating mutation in PTCH1 or activating mutation of SMOm [2]. BCC can cause significant morbidity from local destruction if neglected. The risk of metastasis and death is 6.5% in tumors greater than or equal to 2cm in size [3]. Radiation therapy directly interact with cellular DNA and cause damage or indirectly by creating free radicles derived from the ionization or excitation of the water component of cells. Reactive Oxygen Species (ROS) can lead to mitochondrial damage, DNA mutations, act as signaling molecules to enhance essential growth and proliferation pathways including PI3K and hypoxia-inducible factors. RT aims at depriving cancer cells from multiplying and damage the DNA beyond repair [4]. RT achieves its therapeutic effect by inducing different types of cell death through apoptosis, mitotic catastrophe, necrosis, senescence, autophagy [5].

3. Case Presentation

A 76 year old Caucasian male landscaper with no past medical history except for smoking (61 pack years) presented to the hospital after a Motor Vehicle Accident (MVA) for medical clearance. The patient was not seen by a physician in the last 35 years and his daughter reported that the patient has a worsening chronic forehead wound which started as a small lesion few years ago and he covers it with a beanie. On physical examination he was cachectic male with approximately 9 x10 cm forehead fungating ulcer with pinpoint bleeding sites and rolled out borders. His labs showed hemoglobin 4g/dl, MCV 66. Imaging included CT head and MRI brain, both of which confirmed full-thickness erosion of the fron-

tal bone with further invasion into the Dural layer suggesting his MVA due to a seizure. He was placed on seizure prophylaxis and a punch biopsy confirmed nodular BCC. A PET scan done prior to the Radiation therapy showed large multilobulated soft tissue mass along the right frontal scalp causing bony destruction extending to the inner table of frontal bone. The maximum was SUV 9.5. A multidisciplinary oncology team offered local beam radiotherapy as he was not the candidate for surgery. He was successfully treated with electron beam radiation therapy at depth for 6 weeks and careful preservation of brain tissue. The patient's skin was re-epithelialized and bone re-calcified. The Ulcer on the forehead has completely regressed. Unfortunately the patient was lost to follow up.

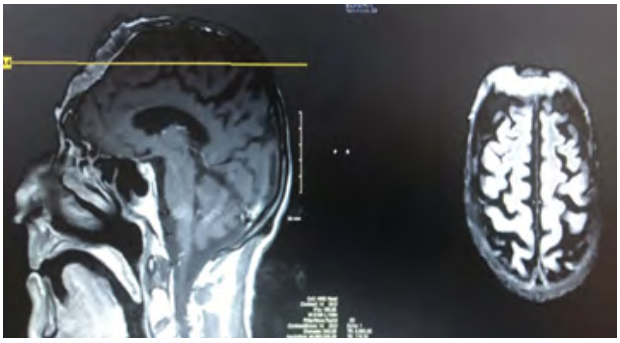

Figure 1:
Time Line
On presentation at the hospital

Day 0

Day 92

Day 120

Day183

Day 355

4. Discussion

Basal cell carcinoma of the scalp and calvarium with intracranial extension with Dural involvement is rare however could show aggressive behavior if neglected [6]. One-third of giant BCC are due to neglect in seeking medical advice like in our patients. The most common reasons are low social milieu/lack of insurance, old age, slow-growing, and painless ulcer delay in the care required. Treatment is primarily directed at local control given its low metastatic potential. Radiation Therapy (RT) is just as effective in treating tumors that are aggressive histologic types and in patients where surgery is contraindicated or unresectable [7]. Excellent results were achieved with RT in the nodular subtype. Surgical options like Mohs Micrographic Surgery are the treatment of choice for high-risk and recurrent BCC as is electron beam radiation therapy. Systemic agents that inhibit the hedgehog pathway such as vismodegib are useful palliative agents for advanced BCC [8]. The treatment of choice is often surgery alone or combined with radiotherapy. In general, RT to a BCC lesion consists of daily fractions of 1.5 to 3Gy given over several weeks [4]. Radiation therapy directly interact with cellular DNA and cause damage or indirectly by free radicles derived from the ionization or excitation of the water component of cells. RT aims at depriving cancer cells from multiplying and damage the DNA beyond repair [4]. RT achieves its therapeutic effect by inducing different types of cell death through apoptosis, mitotic catastrophe, necrosis, senescence, and autophagy [5]. Cure rates have not typically been assessed histologically through RT however the clinical improvement has been unremarkable like in our patient [9]. RT can be used to convert an inoperable lesion into operable lesion. In the treatment of BCC of the face of less than 4 cm in diameter, surgery should be preferred to radiotherapy [10]. Morphea-type basal-cell carcinomas can be cured with radiation therapy; therefore, x-rays have a place in the armamentarium of therapeutic modalities for this tumor if surgery is not feasible or if it is refused by the patient [11]. Post radiation adverse events include acute radiation-related skin toxicity, potential radiation-related changes to underlying structures, and the increased difficulty of managing recurrences within the radiation field. Late adverse events can result in alopecia, cartilage necrosis, and skin pigmentary changes in addition to the risk for secondary malignancy [9]. However the benefits outweigh the adverse effects in regards to healing, painless mode of treatment, controls bleeding and infection in comparison to surgery.

5. Conclusion

Radiation therapy is an effective tool for treatment of cancer. Radiation therapy is also known to have a systemic anticancer response known as abscopal effect and could be evaluated for the future treatment in skin cancer and other organ cancers [12]. Despite the choice of the best possible treatment modalities, it is not uncommon to encounter a giant neglected skin cancer in the 21st century. Our patient's skin was re-epithelialized and bone re-calcified. The Ulcer on the forehead has slowly regressed even after completing RT. This case report emphasizes the use of RT as the sole treatment for BCC with excellent results and prognosis by carefully marking the margins with the dermatoscope and precisely using RT to reduce the recurrence of BCC and making it as effective as surgery.

References

1. Lai V, Cranwell W, Sinclair R. Epidemiology of skin cancer in the mature patient. Clin Dermatol. 2018; 36(2): 167-176.
2. Sehgal VN, Chatterjee K, Pandhi D, Khurana A. Basal cell carcinoma: pathophysiology. Skinmed. 2014; 12(3): 176-181.
3. Morgan FC, Ruiz ES, Karia PS, Besaw RJ, Neel VA, Schmults CD. Factors predictive of recurrence, metastasis, and death from primary basal cell carcinoma 2 cm or larger in diameter. J Am Acad Dermatol. 2020; 83(3): 832-838.
4. Baskar R, Lee KA, Yeo R, Yeoh KW. Cancer and radiation therapy: current advances and future directions. Int J Med Sci. 2012; 9(3): 193-199.
5. Verheij M. Clinical biomarkers and imaging for radiotherapy-induced cell death. Cancer and Metastasis Reviews. 2008; 27(3): 471-480.
6. Kwon CS, Awar OA, Ripa V, Said G, Rocka S. Basal cell carcinoma of the scalp with destruction and invasion into the calvarium and dura mater: Report of 7 cases and review of literature. J Clin Neurosci. 2018; 47: 190-197.
7. Zagrodnik B, Kempf W, Seifert B, Müller B, Burg G, Urosevic M, et al. Superficial radiotherapy for patients with basal cell carcinoma: recurrence rates, histologic subtypes, and expression of p53 and Bcl-2. Cancer. 2003; 98(12): 2708-2714.
8. Sekulic A, Migden MR, Oro AE, Dirix L, Lewis KD, Hainsworth

JD, et al. Efficacy and safety of vismodegib in advanced basal-cell carcinoma. N Engl J Med. 2012; 366(23): 2171-2179.

9. Work Group; Invited Reviewers, Kim JYS, Kozlow JH, Mittal B, Moyer J, et al. Guidelines of care for the management of basal cell carcinoma. J Am Acad Dermatol. 2018; 78(3): 540-559.
10. Avril MF, Auperin A, Margulis A, Gerbaulet A, Duvillard P, Benhamou E, et al. Basal cell carcinoma of the face: surgery or radiotherapy? Results of a randomized study. Br J Cancer. 1997; 76: 100-106.
11. Bart RS, Kopf AW, Gladstein AH. Treatment of Morphea-Type Basal Cell Carcinomas With Radiation Therapy. Arch Dermatol. 1977; 113(6): 783-786.
12. Craig DJ, Nanavaty NS, Devanaboyina M, et al. The abscopal effect of radiation therapy. Future Oncol. 2021; 17(13): 1683-1694.