Basal Cell Carcinoma

Case Presentation

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Chief Complaints: Headache, Pain, Scalp erosion.

History of Present Illness: A 55-year old Russian, non-English speaking male presented to the emergency department with his daughter. She stated that he had arrived in the United States one week previously. He had a history of a basal cell carcinoma of the scalp. It had been diagnosed seven years before but he did not receive adequate therapy in Russia. He was given radiation therapy to the head two years before when the lesion on the scalp measured 2x6 cm. This has since worsened and grown to more than twice the size. He denied any neurological complaints of lightheadedness, dizziness, blurred or double vision, motor or sensory deficits. However, he did report occasional headaches that were non-specific.

Past Medical History: No hypertension, diabetes, peptic ulcer disease or cardiac, pulmonary or genito-urinary complaints.

Allergies: None

Medications: Acetaminophen occasionally.

Past Surgical History: Knife wound to the abdomen many years ago.

Social History: Smoked one and a half packs per day for many years but denied alcohol or illicit drug use.

Physical Examination: Blood pressure 130/70, Pulse 107, Respiratory Rate 18, Oral temperature 97.4°F. Alert and orientated to person, place and time. In no apparent distress, sitting up on a stretcher.

Head: 11x18 cm ulcerated lesion on the top of the head. The lesion was raised with granulation tissue and had a foul smelling, purulent discharge. It was soft to palpation (**Figure 1**).

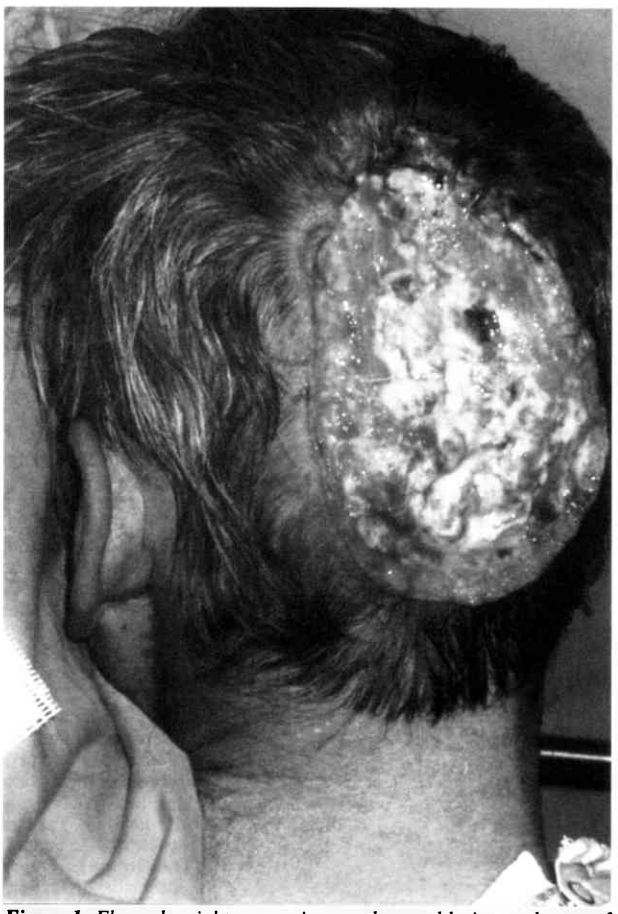

***Figure 1**: Eleven by eighteen centimeter ulcerated lesion at the top of the head, raised lesion with granulation tissue and foul smelling, purulent discharge, soft to palpation*

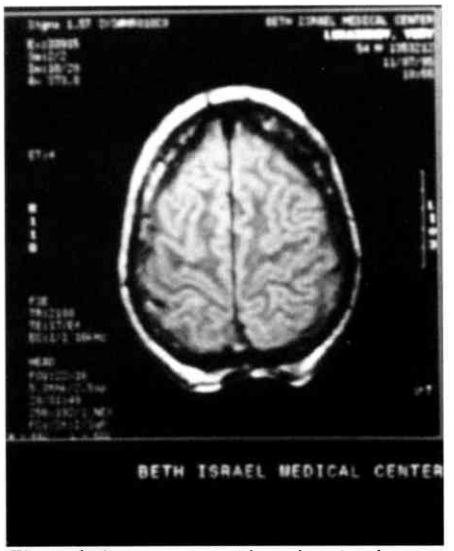

***Figure 2**: bony erosion with unclear involvement of the dura mata in the occipital region and left temporal regions*

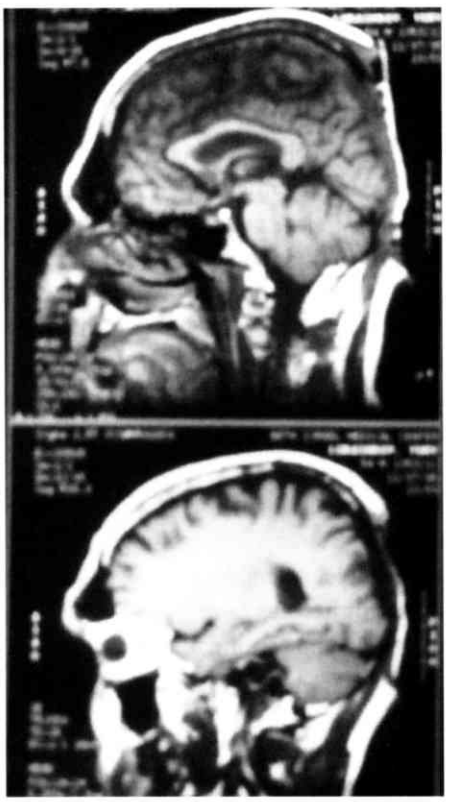

***Figure 3:** MRI of Defect*

Neck: Supple; no jugular venous distention; no bruits or thyromegaly.
Lungs: Clear bilaterally.
Heart: Normal first and second sounds without murmurs, friction rubs or gallop rhythm. Abdomen: Thin; flat; bowel sounds present; non-tender and no masses.
Extremities: No clubbing, cyanosis, or edema.
Pulses: Strong, detectable pulses throughout.
Neurological examination: Alert and orientated; cranial nerves 2-12 were intact; motor and sensory examinations were within normal limits. Deep tendon reflexes, plantar reflexes and cerebellar testing showed no deficit.
Laboratory results: WBC's 14.6, H/H 13.3/39.5, RPR non-reactive, Na 139, K 4.4, Cl 100, HCO3 29, BUN 17, Creatinine. 1.1, Glucose 134
Computerized Tomography showed bony erosion with unclear involvement of the dura mater in the occipital and left temporal regions (**Figure 2**).
Emergency Department course: The patient developed an allergic type of reaction, probably related to the intravenous contrast, for which diphenhydramine was administered. Antibiotic cover with vancomycin and gentamycin was started. After evaluation by several departments including neurology, plastic surgery and medicine, the patient was admitted to the Medical unit for further evaluation and treatment.

Hospital Course:

Day 2

Neurosurgical consultation: No neurosurgical intervention necessary at that time. The patient would need tissue diagnosis for confirmation of pathology. Magnetic resonance imaging to be considered (**Figure 3**).
Plastic surgery consultation: Biopsy performed. Site #1 Scalp, Site #2 above right ear at the border of the ulcer. Recommended continuing cefazolin and applying bacitracin ointment and xeroform to the lesion. The latter to be covered with gauze twice a day.

Day 6

Infection: Recommendation was made to change antibiotics to vancomycin, ceftazidime and tobramycin.
Pathology Report: Emanating from the underside of the epidermis are irregular aggregates of atypical basaloid cells characterized by stromal mucin and clefts and peripheral palisading of nuclei. Focally, there is abundant melanin.
Scalp: Basal Cell Carcinoma, present in all margins of section.
Above right ear: Pigmented basal cell carcinoma, present to the base of the biopsy

Day 7

Radiation Oncology consultation: MRI shows infiltration of the left occipital lobe. Biopsy confirmed basal cell carcinoma. Radiation therapy recommended, to be given as soon as possible using 5,000-6,000 rads, with a combination of x-rays and electron beam.

Day 8

CT of chest revealed suspicious nodules of metastatic disease. A 3x2 cm. mass in the posterior aspect of the right main stem bronchus was present. Radiation treatment was considered to be doubtful because of the extent of the disease and the previous history of no response. The possibility of using chemotherapy was also thought to be questionable because of the low efficacy of chemotherapy against this kind of tumor.

Day 12

Bone scan done that showed bone metastases to be unlikely.

Day 20 (Discharge date)

Daily radiation treatments for three to four weeks were recommended.

Basal Cell Carcinoma

Basal cell carcinoma (BCC) accounts for 75 to 80% of all non-melanoma skin cancer. It is associated with considerable morbidity in terms of medical cost, disfigurement and loss of function. Basal Cell Carcinoma is often defined as a slow-growing malignant neoplasm of the skin that rarely metastasizes (5,7). BCC tends to invade locally with only approximately 100 cases of metastatic disease reported in the world literature. It is the most prevalent cancer in humans. In men and women, 80% of the lesions are located on the head, face, ears, neck and back of the hands. These are skin areas of sun exposure to ultra-violet (UV) radiation. They are hair bearing areas. Environmental risk factors include UV radiation, ionizing radiation and certain chemicals. However, the most common predisposing factor is light skin coloring associated with prolonged exposure to strong sunlight. Polycyclic aromatic hydrocarbons such as those found in coal tars, soot and asphalt are known to cause skin cancer by acting as direct carcinogens or acting as promoting agents. Chronic exposure to arsenic has been associated with skin cancer in sun-exposed and covered skin. However, ample evidence exists that aside from genetic susceptibility, ultraviolet exposure and age are the most important risk factors for developing non-melanoma skin cancer (NMSC). Most skin cancers appear on body areas directly exposed to sunlight. The latency period for developing NMSC is estimated to be approximately 2 to 3 decades.

Histology

The characteristic cells of basal cell carcinoma have large, oval or elongated nuclei and relatively little, poorly defined cytoplasm. The nuclei resemble those of the basal cells of epithelium, but differ by having a larger ratio of nucleus to cytoplasm. They usually show no pronounced variation in size or staining and no abnormal mitosis even in cases of BCC with metastases (5).

BCC displays a considerable variation in appearance clinically and microscopically.

Nodulocystic BCC is the most frequent (approx. 70%) and is composed of rounded lobules of small hyperchromatic cells that are connected to the epidermis by cords or trabeculae. The tumor cells are uniform in size and polygonal in shape with peripheral nuclear palisading in cellular nests. Superficial BCC shows downward, budlike growth tumor lobules from the basal cell epidermis.

Adenoid BCC (20%) displays a reticulated and gland like growth pattern within tumor cell clusters. Lastly, morpheaform BCC (Approx. 15%) has an intense stromal proliferation. Tumor cells are compressed into narrow cords, which are commonly

branched. Peripheral palisading is not readily apparent and it is characterized by deep invasion of the dermis (10).

Basal cell carcinoma has a potential for perineural invasion, both clinically and histopathologically. This results in neoplastic neuropathies, where the tumor infiltrates motor or sensory nerve trunks. It would appear that approximately 0.1% of all basal cell carcinomas exhibit distant spread beyond the skin (6). Regional lymph nodes, lungs and bones are the most frequently involved. It would appear that late, untreated or neglected lesions are the most likely to display metastatic behavior.

Treatment

Usually simple biopsy is performed to obtain histological confirmation of the type of skin cancer.

Standard treatment methods for BCC of the skin include curettage and electrodessication, cryosurgery and surgical excision with 2 to 6mm margins. The goal is always to completely remove the entire tumor with conservation of normal tissue.

Surgical excision is the only method that provides a tissue specimen for evaluation of the margins.

Mohs's micrographic surgery (4) is reserved for recurrent tumors, sizes more than 1-2 cm in diameter, in high risk locations such as the mid-face structures, histological aggressive growth pattern, those with poorly defined clinical margins, tumors with perineural invasion, immunosuppressed patients, incompletely excised tumors and those for which maximal conservation of adjacent tissue may be important. This method is performed under local anesthesia, allowing for margin control with higher cure rates. By definition the Mohs' surgeon functions as both surgeon and pathologist.

Horizontal frozen sectioning technique is used and repeated until all margins are free of tumor without sacrificing more than 1 to 2 mm of normal tissue. This results in higher cure rates.

The generally accepted criteria for defining a basal cell carcinoma metastasis are described by Lattes and Kessler (1).

1. The primary or the metastasis cannot be primarily squamous.
2. The metastatic nodules must be in the lymph nodes or distinct from the primary tumor.
3. The tumor may NOT originate in salivary glands or mucous membranes.

It typically begins as a neglected, large, ulcerated, locally invasive and destructive neoplasm that recurs despite repeated surgery or radiation (3). Most series of MBCC show a predominance of male patients, with a male to female ratio of 2:1 with most patients having a light complexion. The rate of metastasis ranges from 0.0028% to 0.4% (2). Basal cell carcinoma has been found to metastasize by lymphatic and hematogenous routes. In the study by Lattes and Kessler (1) of 170 cases of metastatic BCC, there appeared to be equal frequency in these routes with 17% showing a mixed pattern. The most common sites of hematogenous spread were lung, bone, skin, liver and pleura.

This case has been reported because of the infrequent, rare, incidence of metastasis of BCC.

Other Treatment Modalities

Electrocoagulation - This procedure can be used in large skin cancers. It is performed repetitively until a normal plane is reached. Both Basal cell and squamous cell carcinomas respond equally well.

Radiation - Large areas can be irradiated with a low megavolt electron beam without deleterious effects.
Cryotherapy - This procedure is not advised for treatment of basal cell carcinoma lesions of the scalp.
Chemotherapy - Usually not indicated in basal and squamous cell carcinomas but is appropriate in situations of locally aggressive or metastatic tumors.

Conclusion and Prognosis

Basal cell carcinoma, the most common form of skin cancer, rarely metastasizes. Patients with multiple recurrences and tumors with aggressive or morpheaform features have an increased risk of metastasis. This subset of high-risk patients with these histological and clinical features need to be monitored closely.
Lesions greater than 2.0 cm. in diameter, that are located in anatomically critical areas such as in the central third of the face, are recurrent, or exhibit signs of sclerosis are all associated with a worse prognosis. Recurrences tend to occur within the first two years after treatment.
Whereas basal cell carcinoma has a high cure rate approaching 98%, the prognosis for metastatic BCC is poor with an average survival time of ten to twenty months. Treatment modalities should be aggressive and initiated as soon as recurrences or metastases are detected.

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