Basal Cell Carcinoma

Pathophysiology and Clinical Presentation:

Basal cell carcinoma represents 70-80% of all non-melanoma skin cancers and is the most common type of skin cancer. Nearly one million Americans will develop a basal cell cancer yearly. Basal cell carcinoma arises from epidermal basal cells. In general, these lesions most often occur on the face with the nose being the most common site (Figure 1). It's also the most easily treated and the least likely to spread. Basal cell carcinoma usually appears as a pearly or waxy bump on the face, ears or neck or as a flat, flesh-colored or brown scar-like lesion on the chest or back

Subtypes:
1) **Nodular:** this is the most common subtype of basal cell cancer and usually presents as a pearly nodule with defined borders and dilated blood vessels, often with central ulceration
2) **Superficial:** this is the least invasive of the basal cell carcinoma subtypes. It typically presents as a slowly enlarging erythematous, scaling plaque. It is more common in men and often arises on the trunk.
3) **Pigmented:** this subtype contains melanin so it may be confused with melanoma and biopsy is required to make the histological distinction.
4) **Morpheaform:** this is a high-risk, invasive subtype of basal cell carcinoma. It often presents as a solitary flat, indurated, white or yellow plaque with ill-defined borders.
5) **Micronodular:** this is another high-risk subtype that can appear very innocuous and is often large before it is diagnosed. It presents similarly to the morpheaform subtype above. This subtype may infiltrate deeply and therefore has a higher local recurrence rate.

Risk Factors:

- UV radiation exposure, immunosuppression, arsenic exposure, therapeutic radiation exposure

- Age, susceptibility to UV radiation (fair skin, light eyes), history of sunburns (especially at a young age), tanning salon use

- **Basal cell nevus syndrome**: an autosomal dominant mutation in the **patched** (PTCH) **gene,** a tumor-suppressor gene on chromosome 9. The syndrome is characterized by multiple congenital anomalies (macrocephaly, hypertelorism, palmoplantar pits, jaw cysts) as well as an increased risk of basal cell carcinoma. The basal cell carcinomas occur at a young age and are frequently multiple. Ultraviolet (UV) light exposure appears to be an important cofactor. BCCs are much more common in sun-exposed areas and are much more common in whites with the syndrome.

- Xeroderma pigmentosum, or XP, is an autosomal recessive genetic disorder of DNA repair in which the ability to repair damage caused by ultraviolet (UV) light is deficient. This disorder leads to multiple skin malignancies at a young age.

-Albinism, which is a form of hypopigmentary congenital disorder, characterized by a lack of melanin pigment in the eyes, skin and hair, or more rarely in the eyes alone. These patients are also at increased risk of developing non-melanoma skin cancer.

Natural History:

Basal Cell Carcinoma is slow-growing and locally invasive with rare metastases. The overall risk of metastases is estimated to be less than 0.1%. The risk of invasion and recurrence is based on size, duration, location and subtype (morpheaform and micronodular subtypes with higher risk). Lesions on the face, ears and scalp carry increased risk. Even without recurrence, a personal history of basal cell carcinoma increases the risk of developing all types of skin cancer by about 40% in five years.

Treatment:

Many treatment modalities are used for basal cell carcinoma depending on the lesion and patient preferences.

- Surgical excision with either frozen section histology, or parafin embedded fixed tissue pathology is the preferred method for removal of most basal cell carcinomas.
- Mohs micrographic surgery is a pathology sectioning method that allows for the complete examination of the surgical margin and is performed by specially trained surgeons. Mohs surgery is most commonly used in anatomic areas (eyelid, nose, lips) where control of margins and preservation of normal tissue are imperative.
- Electrodessication and curettage: most common treatment modality. ED&C is used for low-risk lesions, especially nodular and superficial types.
- Cryosurgery
- Radiation: may be used alone or in an adjuvant setting for high-risk or recurrent lesions.
- Laser therapy
- Topical 5-fluorouracil prevents the formation of RNA which, in turn, prevents the formation of DNA and therefore cells cannot multiply.
- Topical immunomodulators

References:

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