The basal cell epithelioma (BCE) is the most common type of skin cancer in light-completed individuals. Its incidence correlates with geographic latitude and cumulative sun exposure (1–3), with most basal cell epitheliomas arising on sun-exposed body sites. Two centuries of migrations of fair-skinned Europeans to sunnier lands have made it more common (4). Unlike melanoma and squamous cell carcinoma, BCE only extraordinarily rarely metastasizes; rather it is a local infiltrator that, if neglected, may invade and destroy its underlying structures. The BCE is derived from incompletely differentiated immature keratinocytes of the epidermis or cutaneous appendages. As such, it has been viewed by some as a locally aggressive hamartoma. This view is supported by the general lack of cellular dysplasia, but is contradicted by its rare metastatic behavior.

Although ultraviolet light exposure is the most frequent carcinogenic agent, x-rays may also produce BCEs, especially if they are superficial so that superficial dermal structures are left intact (5, 6). Like squamous cell carcinomas and melanomas, BCEs may develop in thermal and other scars. Unusual settings for BCEs have also been noted (7), including within chickenpox and vaccination scars, in venipuncture sites (8), in an area of chronic otitis media (9), and within tattoos (10). However, unlike the squamous cell carcinoma (SCC), the BCE tends to develop on sun-exposed sites that do not entirely correspond to maximal solar exposure, such as in the inner canthus.

Although chemical carcinogens can produce the BCE in animal models such as the mouse and rat, the role of arsenic as a possible carcinogen in humans is unclear (11). Some feel that arsenic produces multiple superficial-type basal cell epitheliomas in humans. The BCE may also develop beside or within other lesions such as melanocytic nevi (12) or seborrheic keratoses (13), sometimes as a presumably incidental "collision" event or stimulated independently by carcinogenic factors such as irradiation.

Basic work on the biology of BCE has been slow due to lack of a suitable animal or tissue culture model. The BCE exhibits a remarkable stromal dependence; attempts to transplant BCE without stroma have been unsuccessful (13a). Much effort has been expended in analyzing the stromal environment of the BCE, including its collagenase activity (14). It is hoped that implantation studies onto nude mice will be fruitful (15). BCE cells have different properties than normal keratinocytes as demonstrated by a number of lectins, monoclonal antibodies, and autoantibodies (16, 17, 17a). For example, there is a loss of beta-2 microglobulin from the BCE cell surface, a deficit of some epidermal keratin proteins, alterations in certain lectin binding specificities, and a reduced rate of overall protein synthesis with an increase in N-linked glycoprotein biosynthesis (17). Peanut lectin staining was positive around most BCEs in one biopsy study (17a). There are decreased anchoring-fibril antigens in basal cell carcinoma (18). Desmoplastic BCEs exhibit a high type IV collagenase activity, whereas the other BCE types have high levels of type I collagenase, perhaps explaining the former's greater ability to infiltrate (19). Histochemical and immunocytochemical analysis of BCE subtypes shows promise, employing new technologies, including monoclonal antibodies (20). Monoclonal studies may prove useful for diagnosis of difficult histologic patterns (16).

BCEs tend to be more aggressive in immunosuppressed patients; both cell-mediated and humoral immunity may be important defenses against this
common skin cancer (21). The recent report of a patient with metastatic BCE and acquired immunodeficiency syndrome-related complex may foreshadow an additional dimension to the AIDS story (22).

Historical Aspects

The first description of the basal cell epithelioma has been credited to the Irish ophthalmologist Arthur Jacob in 1827 (23). He described “a destructive ulceration of peculiar character which I have observed to attack the eyelids, and extend to the eye-ball, orbit and face. The characteristic features of the disease are, the extraordinary slowness of its progress, the peculiar condition of the edges and surface of the ulcer...” He argued that it should not be “confounded with genuine carcinoma” (pp. 232–233). It was known for many years as Jacob's ulcer. Other terms used include chancreoid ulcer, ulcus exedens, benign skin cancer, basal cell carcinoma, and rodent ulcer. The latter two are still used today. I prefer the BCE in recognition of its generally benign behavior. However, basal cell carcinoma is equally acceptable.

A number of foreign language synonyms, basalzellenkrebs and later basalioma, have been used since the early 20th century (24). One occasionally sees the basalioma still used in the English-language literature today.

Clinical Features

There are five main types of BCE, summarized in Table 7.1: the typical noduloulcerative BCE, the pigmented BCE, cystic BCE, the superficial BCE, and the sclerosing BCE. All of these tend to be situated on the face, with the exception of the superficial BCE, which is more likely on the trunk. However, the BCE can occur at any site, including the vulva, where it accounts for 2–3% of all vulvar cancers (25), scrotum (26), palms (27), soles (28), and the nail bed, where it usually resembles a chronic paronychia (29). Occasionally, BCEs may develop within tattoos, burns, chronic leg ulcers, chickenpox scars, vaccination scars, and colostomy sites (30).

Noduloulcerative BCE

This most common form is usually a rather translucent papule or nodule (Figure 7.1). Telangiectasis may be evident, with fine ectatic blood vessels transversing the papule or nodule. As one carefully evaluates small BCEs, one screens for coloration, since a yellowish hue makes one consider benign sebaceous hyperplasia—although the rare BCE with sebaceous differentiation (sebaceous epithelioma) may also exhibit the yellowish coloration. A 1–3-mm papular BCE is usually rather regular and smooth. As it expands, a more dome-shaped morphology is apparent, often with a central umbilication and a tendency to be friable after minor trauma. The noduloulcerative BCE is usually non-pigmented, although flecks of brown pigment are not rare.

Pigmented BCE

The pigmented type BCE may display a uniformly dark pigmentation resembling that of a melanoma; however, its biologic behavior is that of the typical noduloulcerative BCE (Figure 7.2, color illustration on p. 148). Occasionally, the cystic BCE may also have a considerable amount of pigmentation,