

Basal Cell Carcinoma of the Prostate: A Clinicopathologic Study of 29 Cases

Tehmina Z. Ali, MD* and Jonathan I. Epstein, MD* † ‡

Abstract: We studied 29 cases of basal cell carcinoma of the prostate including what others call adenoid cystic carcinoma of the prostate. Patients' age ranged from 42 to 89 (mean 69) years. The most common methods of diagnosis was transurethral resection (TURP) (n = 29) and needle biopsy (n = 9). In 28/29 cases, slides were reviewed and 24 (86%) cases showed more than 1 pattern: adenoid cysticlike (AC-P) pattern and small solid nests with peripheral palisading were the most predominant patterns, each seen in 18 cases (64%). Other patterns included: basal cell hyperplasia-like in 9 cases (32%); small tubules occasionally lined by a hyaline rim in 9 cases (32%), with 4 of these cases also demonstrating intermingling cords of cells; and large solid nests in 8 cases (28.5%), 5 of which had central necrosis. Fourteen cases of small nests and tubules were centrally lined by eosinophilic cells. Desmoplasia was noted in 20 (71%) cases. Infiltration around benign glands was seen in 10 (36%) cases, with predominantly small nests and AC-P. Invasion of thick muscle bundles of the bladder neck was seen in 10 of 21 TURP cases. Perineural invasion was noted in 3 cases with AC-P and 1 case of small basaloid nests. Perineural and vascular invasion was seen in 2 basal cell carcinomas with large basaloid nests. Mitoses ranged from 0 to 60/10 hpf (mean = 4). bcl2 was diffusely positive in 22/24 (92%) cases. Ki67 ranged from 2% to 80% (mean = 23%). Ki67 \geq 20% was seen in 13 (56.5%) cases, including all patterns except small solid nests. Basal cell markers (HMWCK, p63) either: (1) highlighted multiple layers of cells in 15/25 (60%) cases with sparing of the inner most luminal layer; (2) labeled just the outermost layers in 6/25 (24%) cases; or (3) reacted with only a few scattered cells in 4/25 (16%) cases (3 with large solid nests with central necrosis, 1 with tubules and cords). Seven patients had RP with: 5/7 showing extraprostatic extension with 1/5 also showing seminal vesicle involvement and 2/5 also with a positive margin; 1/7 having organ confined disease; and 1/7 showing no residual disease. An additional 11 cases showed extraprostatic extension on TURP with bladder neck invasion (n = 10) or periprostatic adipose tissue invasion (n = 1). Of 29 (65.5%) cases, 19 had follow-up > 1 year with a mean of 4.3 years (1 to 19 y). Of 19 (77%) cases, 14 had no evidence of disease after 1 to 19 (mean 5.8) years. Of 19 patients, 4 locally recurred with 2 after TURP, 1

after enucleation, and 1 after RP. Metastases developed in 4/29 patients: 1 in lung, 1 in lung and liver, 1 in lung, bone and liver, 1 in penile urethra. Basal cell carcinomas are rare tumors with a broad morphologic spectrum. These tumors predominantly show an indolent course with local infiltrative behavior. A small subset behaves aggressively with local recurrences and distant metastases. The most common morphology among those with an aggressive behavior is large solid nests more often with central necrosis, high Ki67%, and less staining with basal cell markers.

Key Words: basaloid carcinoma, adenoid cystic carcinoma, prostate carcinoma, basal cell hyperplasia, basal cell carcinoma
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Basal cell proliferations within the prostate gland usually arise in the transition zone with a spectrum of proliferative lesions ranging from basal cell hyperplasia to basal cell carcinoma.^{8,9,25} Basal cell hyperplasia exhibits a broad range of morphologic patterns.^{6,10,18,20} Malignant tumors composed of basal cells have been designated as "adenoid cystic carcinoma" or "adenoid basal cell tumor" when they share histologic features of salivary gland tumors, and more generically as "basaloid carcinoma" or "basal cell carcinoma" when they lack such a resemblance.^{2,3,7,8,12,15,16,25} The current study sought to fully characterize the spectrum of histology of basal cell carcinoma along with its immunohistochemical profile and long-term behavior.

MATERIALS AND METHODS

We studied 29 cases of basal cell carcinoma (collected over a period of 20 y). Twenty-eight (28) cases were from the consultation files of one of the authors and 1 was an in-house case. These cases included what others have called adenoid cystic carcinoma of the prostate. Two patients have previously been reported in case reports, the first one without follow-up¹² and the second a recently reported case.¹⁸ In addition to recording the morphologic patterns present, the number of mitoses/10 hpf was also counted. Ki67 and bcl2, and basal cell marker (high molecular weight cytokeratin and p63) immunostains were performed either on the available paraffin blocks or submitted by contributors in 24 and 25 of 29 cases, respectively. Immunohistochemistry was performed, using antibodies against bcl2, Ki67, p53, p63, high molecular weight cytokeratin (all predilutes, Ventana,

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Tucson, Arizona), and α -methyl acyl coenzyme-A race-mase (AMACR) (1:100, Zeta Corporation, Sierra Madre, California). In addition, a predilute PIN-4 Cocktail (P504S+HMW CK+p63) from Biocare Medical (Concord, CA) was used. Intensity of bcl2 staining was evaluated on a scale of 1+ to 3+. Ki67 was evaluated as percentage of cells positive in the most mitotically active area of the tumor. Follow-up was obtained for all the patients; however, only 19 out of 29 patients had follow-up longer than a year. To determine morphologic criteria for malignancy in basaloid lesions, 70 cases of florid basal cell hyperplasia were reviewed from the consult files of one of the authors.

RESULTS

Clinical

The patients' age ranged from 42 to 89 (mean 69) years (Table 1). The main clinical presentation was urinary obstructive symptoms with 21 diagnosed on an initial transurethral resection of the prostate (TURP), of which 5 subsequently underwent radical prostatectomy (RP), 1 had an initial enucleation followed by 2 TURPs for local recurrence, and 1 had an RP only. Six cases were diagnosed on needle biopsy, with 1 patient subsequently undergoing a TURP and another patient underwent an RP for Gleason Score (GS) 4+4 = 8 acinar carcinoma

and basal cell carcinoma, which were concurrently diagnosed on needle biopsy.

Histology

In 28/29 cases, slides were available for review and the following patterns were observed with 24 (86%) of cases showing more than one pattern:

(1) adenoid cysticlike pattern (AC-P) in 18 cases (64%) (8 focally) (Figs. 1, 2); (2) small solid nests with peripheral palisading in 18 cases (64%) (5 focally) (Fig. 3); (3) basal cell hyperplasia-like pattern in 9 cases (32%) (Fig. 4); (4) small tubules occasionally lined by a hyaline rim (Figs. 5, 6) in 9 cases (32%), with 4 of these cases also having intermingling cords of cells (Fig. 7); and (5) large solid nests in 8 cases (28.5%), 5 of which had central necrosis (Figs. 8, 9). Fourteen cases of small/medium nests and tubules were centrally lined by eosinophilic cells (Figs. 10, 11). Desmoplasia or prominent myxoid stroma was noted in 20 (71%) of cases with prominent desmoplasia in 9, moderate and minimal in 6 and 5 cases, respectively (Figs. 1, 5, 9, 11, 12). Prominent infiltration around benign prostatic glands was seen in 10 (36%) cases, with predominantly small nests and AC-P (Figs. 13, 14). Invasion of thick muscle bundles of the bladder neck was seen in 10 of 21 TURP cases (Fig. 15). Perineural invasion was noted in 3 cases with AC-P and 1 case with small solid nests. Perineural and vascular

TABLE 1. Clinicopathologic Correlation of Morphology With Outcome

Age	Predominant Pattern	Necrosis	EPE	Mets	Loc	Ki67%	Specimen	RP Findings	Treatment	Prognosis/FU years
63	Big solid nests	+	-	+	+	N/A	TUR		RT and Chemo	Penile mets/1
51	Big solid nests	+	+	+	-	70	NBx + TUR		RT	Bone, liver, lung mets/1
86	Big solid nests	+	-	+	+	80	TUR			Lung mets/2
69	Big solid nests	+	+	+	+	30	RP	EPE; MAR +	RT and Chemo	Lung and liver mets/ < 1
56	Big solid nests	+	+	-	-	70	TUR + RP	EPE; SV +		NED/1
53	Big solid nests	+	+	-	-	20	TUR + RP	EPE; MAR +		NED/1
83	Big solid nests	+	-	-	+	20	TUR			No FU
73	Big solid nests	-	N/A	-	-	N/A	NBx			NED/9
87	Small solid nests	-	+	-	-	15	TUR			NED/10
65	Small solid nests	-	N/A	-	-	10	NBx			NED/9
66	Small solid nests	-	-	-	-	2	TUR			NED/6
51	Small solid nests	-	+	-	-	N/A	TUR			NED/ < 1
77	Small solid nests	-	+	-	-	40	TUR			No FU
62	Small solid nests	-	+	-	-	20	TUR			NED/1
76	Small solid nests	-	+	-	-	10	TUR			NED/1
65	Small solid nests	-	N/A	-	-	N/A	NBx			NED/ < 1
89	Small solid nests	-	-	-	-	5	TUR			No FU
82	Small solid nests	-	N/A	-	-	5	NBx			NED/2
73	Small solid nests	-	-	-	-	50	TUR			NED/ < 1
66	AC-P	-	+	-	-	2	TUR + RP	No Tumor	Pre-RP RT	NED/19
74	AC-P	-	+	-	-	20	TUR			NED/6
76	AC-P	-	-	-	-	10	TUR			NED/1
70	AC-P	-	+	-	-	2	NBx + RP	OC		NED/5
66	AC-P	-	-	-	-	N/A	TUR + RP	EPE		NED/4
78	BCH	-	+	-	-	2	TUR			No FU
76	BCH	-	-	-	-	2	TUR			NED/ < 1
69	BCH	-	+	-	-	20	TUR			No FU
42	BCH	-	+	-	-	30	TUR + RP	EPE		NED/8
71	BCH with nodules	-	+	-	+	20	Enuc + TURs			NED/11

BCH indicates basal cell hyperplasia pattern; Chemo, chemotherapy; Enuc, enucleation; FU, follow-up; Loc, local recurrence; MAR, margins; Mets, metastases; N/A, not assessable; NBx, needle biopsy; NED, no evidence of disease; OC, organ confined; RT, radiation; SV, seminal vesicles; TUR, transurethral resection.

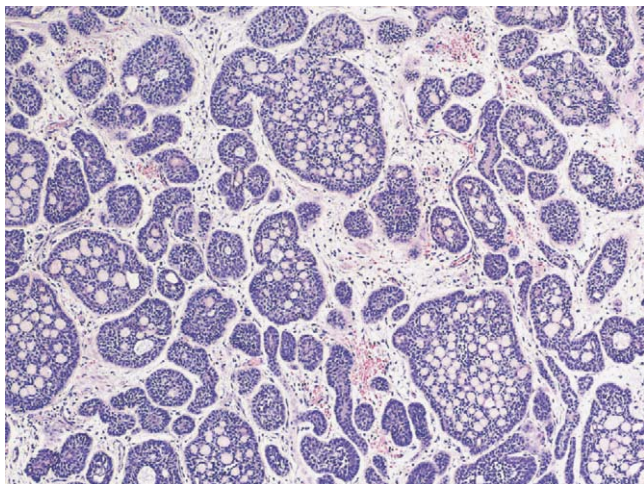


FIGURE 1. Basal cell carcinoma. AC-P pattern with prominent desmoplastic stroma.

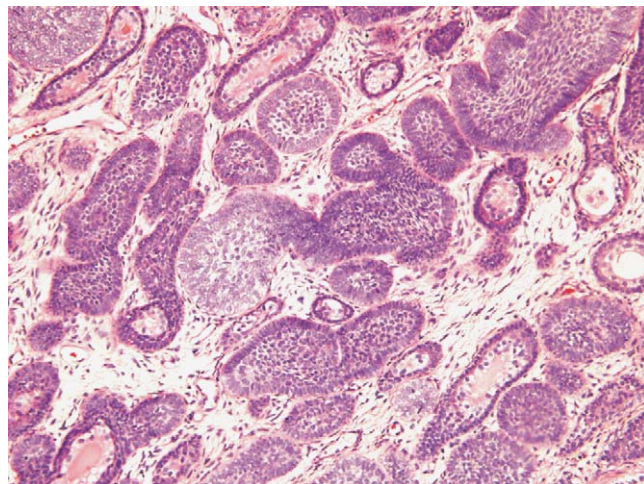


FIGURE 3. Basal cell carcinoma. Small solid nests with peripheral palisading.

invasion was seen in 2 cases of basal cell carcinoma with large basaloid nests. Mitoses ranged from 0 to 60/10 hpf (mean = 4). Collagenous globules, squamous differentiation, focal micro-calcifications, and vacuoles were noted in 3 (11%), 4 (14%), 2 (7%), 1 (3%) cases, respectively (Fig. 16). Two (7%) cases were sarcomatoid carcinoma with both prostate stromal sarcoma and small cell carcinoma present, in areas intermingling and separate from basal cell carcinoma. Four (14%) cases also had acinar carcinoma, with GS 2+2 = 4 (n = 1), 3+3 = 6 (n = 2), and 4+4 = 8 (n = 1).

Immunohistochemistry

Immunohistochemistry for bcl2 was diffusely positive in 22/24 (92%) cases with strong intensity in 16 and moderate in 6 cases with the remaining 2/24 (8%) cases negative (Fig. 17). Ki67 ranged from 2% to 80% (mean = 23%). Ki67 > 20% was present in 13 (56.5%)

cases, including all patterns except small solid nests (Fig. 18, Table 1). Basal cell markers (high molecular weight cytokeratin, p63) highlighted multiple layers of cells in 15/25 (60%) cases with sparing of the innermost luminal layer (Fig. 19). In 6/25 (24%) cases, just the outermost layers were highlighted with basal cell markers (Fig. 20), whereas 4/25 (16%) cases showed only a few scattered positive cells. Of the latter 4 cases, 3 had large solid nests with central necrosis and the fourth case had tubules and cords. Six of 22 (27%) cases showed some degree of AMACR staining (Fig. 20) and only 2/23 cases focally labeled with p53.

Findings at RP and Transurethral Resection

Seven patients had RP with 5/7 showing extraprostatic extension (EPE) with 1/5 also showing seminal vesicle involvement and 2/5 also with a positive margin; 1/7 was organ confined; and 1/7 had no residual disease.

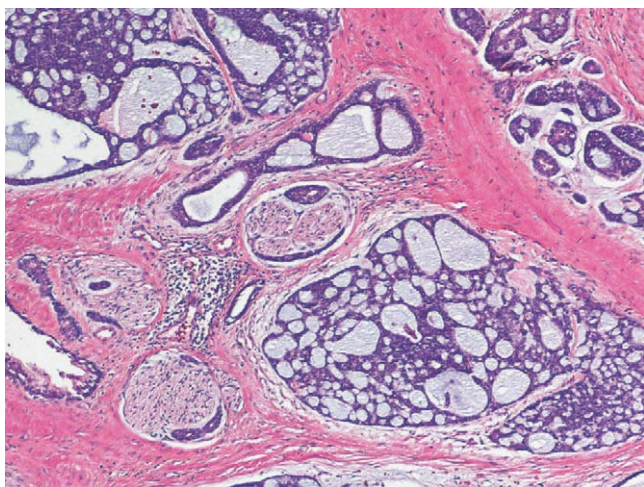


FIGURE 2. Basal cell carcinoma. AC-P pattern with perineural invasion.

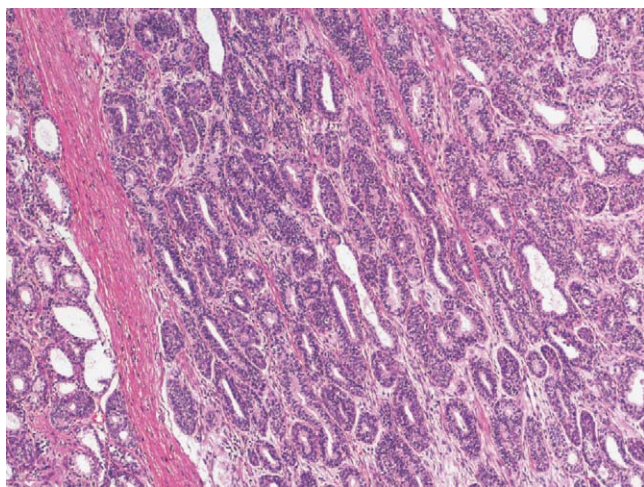


FIGURE 4. Basal cell carcinoma. Basal cell hyperplasiainlike pattern.

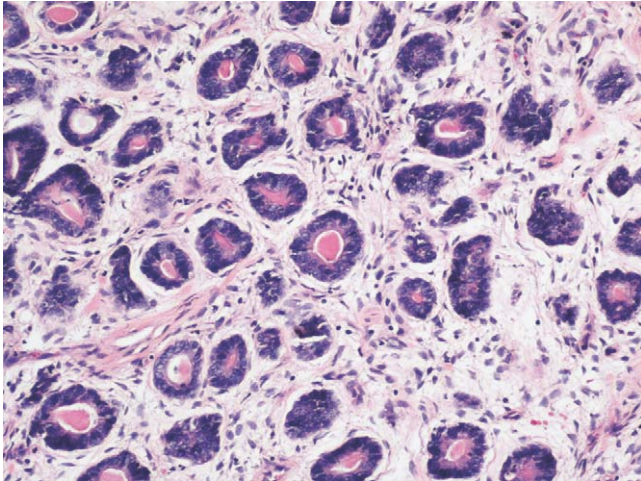


FIGURE 5. Basal cell carcinoma. Small tubular pattern with prominent myxoid stroma.

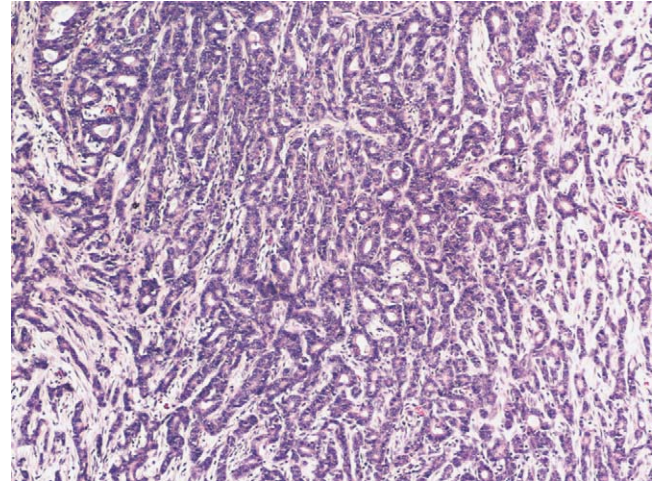


FIGURE 7. Basal cell carcinoma. Tubules with intermingling cords of cells.

An additional 11 cases showed EPE on TURP with bladder neck invasion in 10 and periprostatic adipose tissue invasion in 1 case. In 3 of the 5 RP specimens available for review, the basal cell carcinoma predominantly involved the peripheral zone, 1 the transition zone, and 1 the entire prostate.

Follow-up

Nineteen of 29 (65.5%) cases had ≥ 1 -year follow-up with a mean of 4.3 years (range of 1 to 19 y). There was no evidence of disease in 14/19 (77%) cases after 1 to 19 years (mean 5.8 y). Local recurrence occurred in 4/19 patients, 2 after TURP, 1 after enucleation, and 1 after RP. Metastases developed in 4/29 patients (3 of these 4 also had local recurrence): 1 in lung, 1 in lung and liver, 1 in lung, bone and liver, and 1 in penile urethra. Of the 4 patients with metastases, 3 of them had pure basal cell carcinoma. The fourth with lung and liver spread also had

a high-grade stromal sarcoma. The predominant pattern in the prostate of the 4 patients with metastases was that of large solid nests with central necrosis. The patient who had local recurrence only, had a predominant basal cell hyperplasia pattern forming nodules.

DISCUSSION

Basal cell carcinomas are rare tumors. They predominantly occur in older men with symptoms of urinary obstruction or prostatism, on account of their usual origin in the transition zone. In the current study, majority of the cases were diagnosed on TURP and were presumably of transition zone origin. However, some of the basal cell carcinomas at RP in our study predominantly involved the peripheral zone. It is also likely that the few basal cell carcinomas diagnosed in our study on

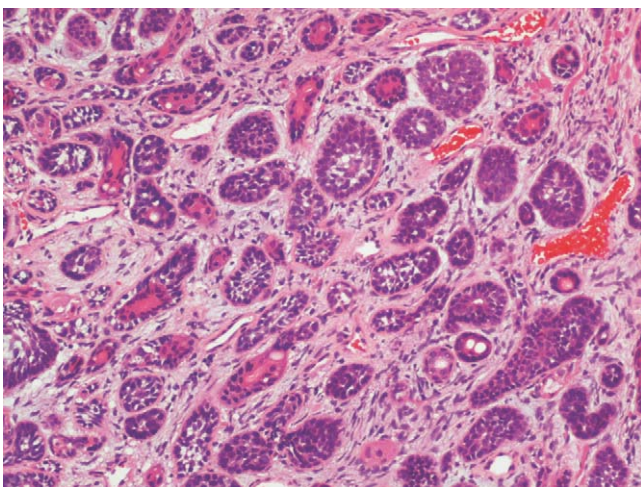


FIGURE 6. Basal cell carcinoma. Small tubules lined by hyaline rim of collagen.

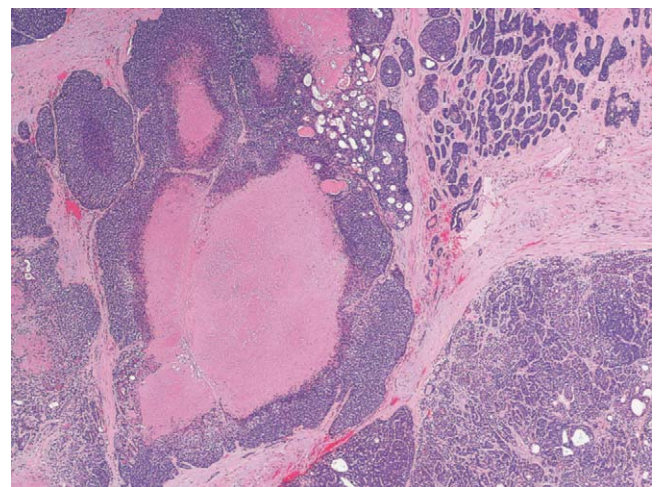


FIGURE 8. Basal cell carcinoma. Large nests with central necrosis adjacent to small and medium sized basaloid nests.

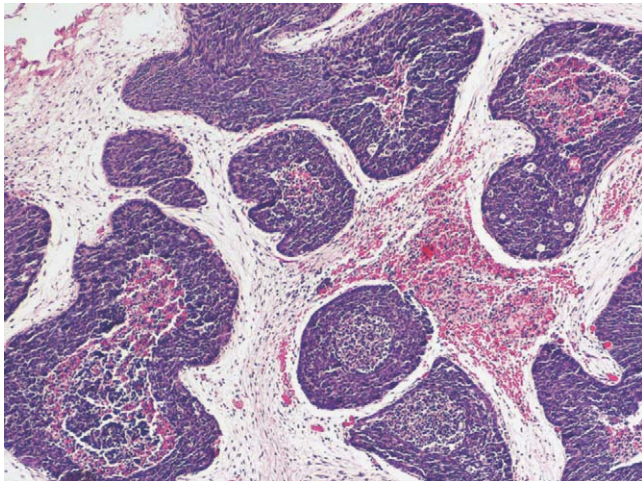


FIGURE 9. Basal cell carcinoma. Large basoloid nests with myxoid stroma.

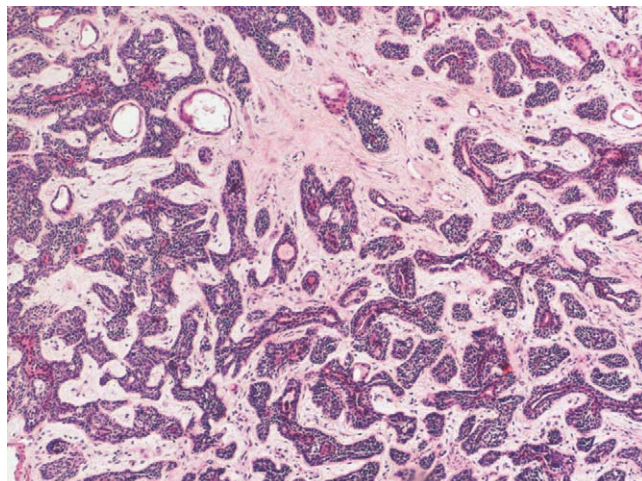


FIGURE 11. Basal cell carcinoma. Anastomosing nests with central tubules lined by eosinophilic cells and associated fibrotic stroma.

needle biopsy were located to some extent in the peripheral zone of the prostate.

In the literature, there are 3 reported cases of basal cell carcinoma in men younger than 40 years and the youngest case in our series was 42 years old.^{1,13,16} Less commonly, a few cases are diagnosed incidentally on needle biopsy as a result of elevated serum prostate specific antigen (PSA) levels because of the presence of concomitant acinar adenocarcinoma, as was seen in 1 of our cases with concurrently diagnosed GS 4+4 = 8 tumor. Basal cell carcinoma is not associated with a raised serum PSA or prostate specific acid phosphatase (PAP) level unless accompanied by acinar adenocarcinoma.^{2,3,8,9,11,13-15,17-19,21,22,25}

Basal cell carcinoma shows a broad morphologic spectrum. Basal cell carcinoma with an adenoid cystic

pattern was first described in 1974.⁵ Other patterns described in their study included cordlike, glandular, and basoloid. Subsequent reports have also noted the presence of different morphologies within the same tumor.^{11,18,19,25}

In our study, 24 of 28 cases showed more than one pattern within the same tumor. AC-P and small solid nests with peripheral palisading were the most common patterns. AC-P was either seen as small-medium sized round-oval cribriform glands with layers of basoloid cells interspersed with rounded spaces (pseudocysts) filled with basophilic material to large irregular cribriform sheetlike growths. The small solid nests with peripheral palisading were often mixed with nests containing lumina. The next most common pattern was that of basal cell hyperplasia-like pattern. The glands had multiple layers of basal cells with central dilated lumina, indistinguishable

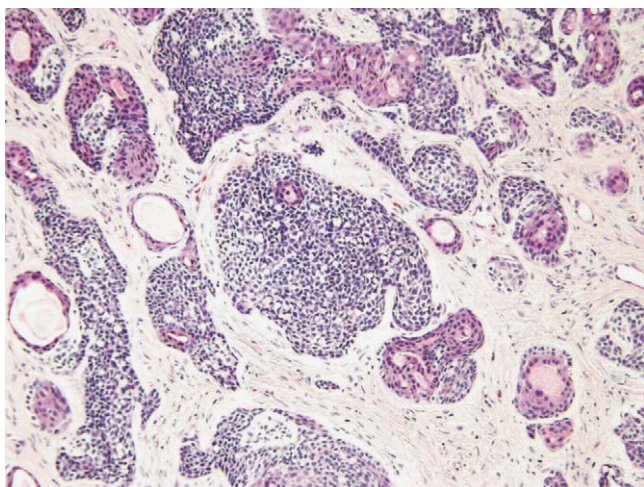


FIGURE 10. Basal cell carcinoma. Variably sized small and medium nests with irregular shapes and central tubules lined by eosinophilic cells.

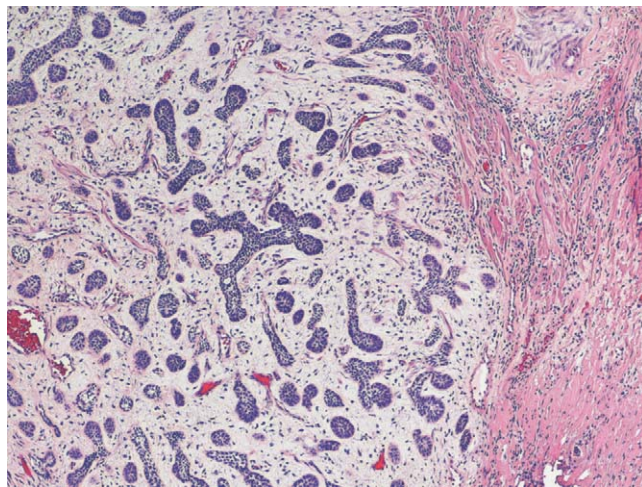


FIGURE 12. Basal cell carcinoma. Small nests of basal cell carcinoma with striking myxoid stromal reaction compared to surrounding uninvolved prostatic stroma.

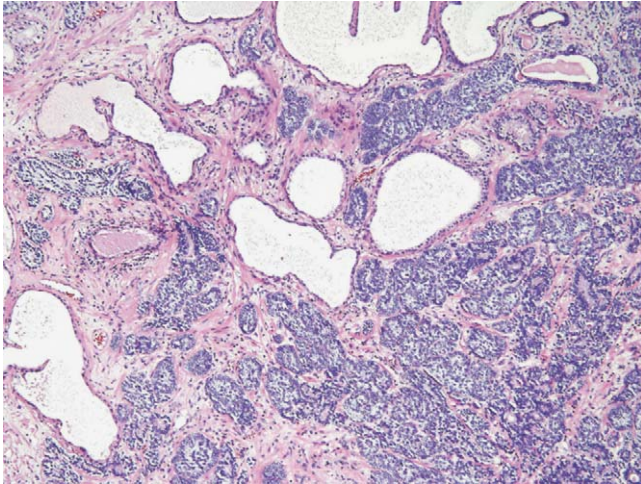


FIGURE 13. Basal cell carcinoma. Basaloid nests infiltrating widely and as single units between benign prostate glands.

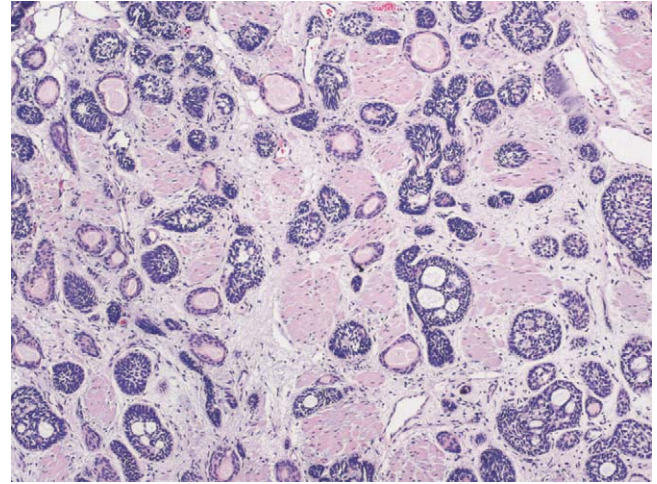


FIGURE 15. Basal cell carcinoma. Invasion of thick muscle bundles.

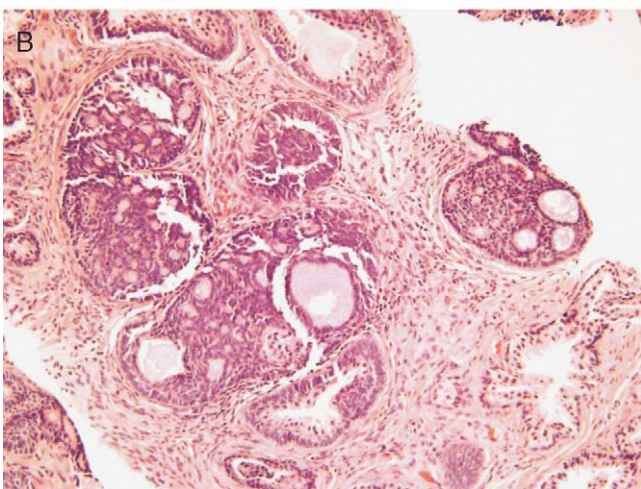
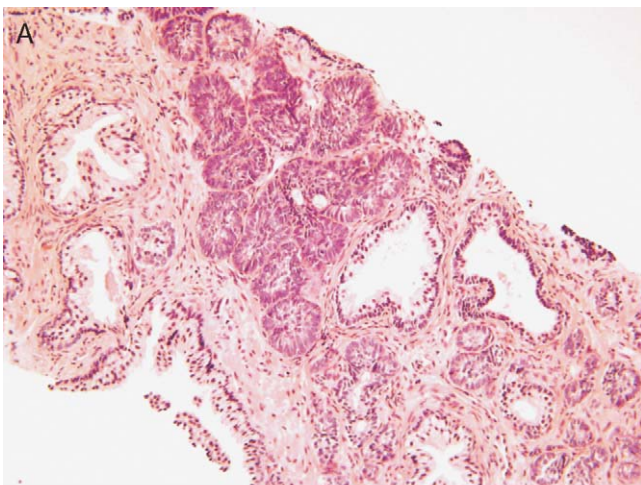


FIGURE 14. Basal cell carcinoma. Needle biopsy with small basaloid nests (A) and AC-P pattern (B) of basal cell carcinoma infiltrating in between benign prostate glands.

from basal cell hyperplasia glands except that these glands were seen infiltrating amongst thick muscle bundles of the bladder neck and extensively infiltrating between benign prostatic glands. Another pattern was that of small tubules lined by a hyaline rim. Small tubules and small nests with lumina were frequently lined by cells containing conspicuous eosinophilic cytoplasm. A few of the cases with small tubules were seen intermingling with irregular cords of basaloid cells. The least common pattern was that of large round-irregular solid nests of basaloid cells with more cytological atypia and mitoses than other patterns, with in some cases central comedo-type necrosis.

A desmoplastic stromal response around the infiltrating glands was seen in approximately three-quarters of the cases studied. Others have noted this phenomenon and have considered it a feature that is helpful in

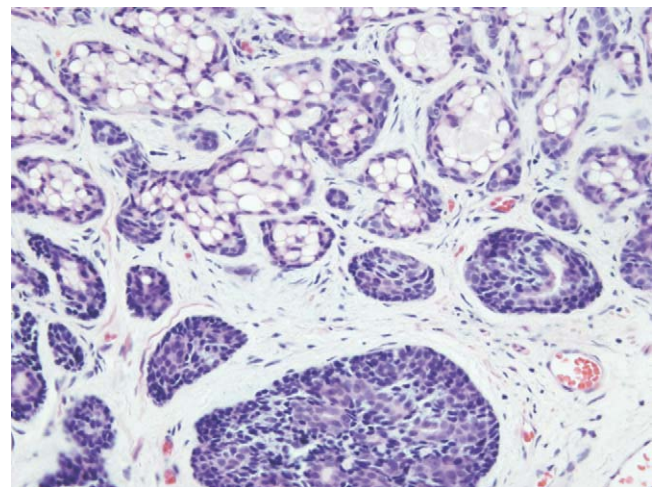


FIGURE 16. Basal cell carcinoma. Basaloid nests with prominent vacuoles.

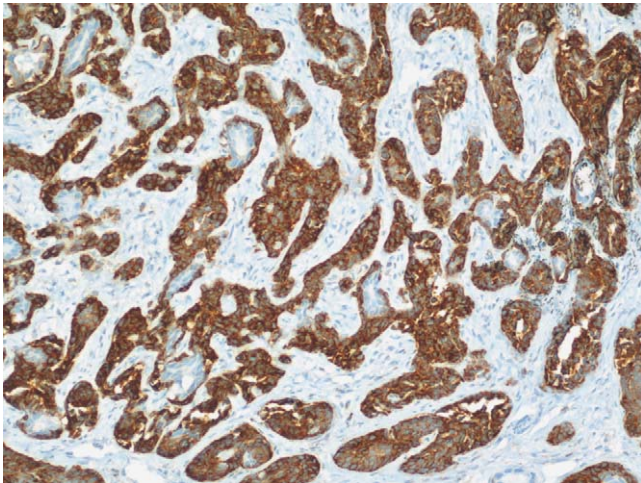


FIGURE 17. Basal cell carcinoma. Diffuse staining for bcl2.

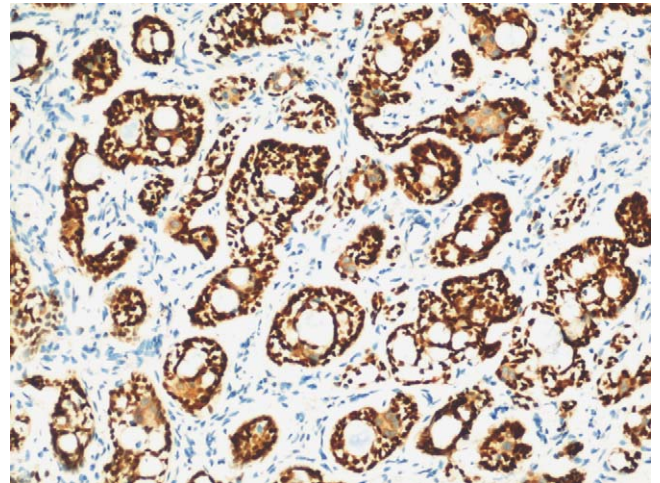


FIGURE 19. Basal cell carcinoma. Diffuse expression of p63 with occasional sparing of innermost luminal cells.

distinguishing basal cell carcinoma from basal cell hyperplasia.^{4,23,25} In some cases this stromal response is more myxoid or fibromyxoid.¹⁸ In contrast to adenoid cystic carcinoma originating in the salivary glands, we and others have noted squamous differentiation in a subset of basal cell carcinomas arising in the prostate.^{2,25} Perineural invasion was noted in 6 of our cases most commonly with the adenoid cystic pattern, yet also infrequently with other patterns.^{1,8,15,16} Vascular invasion is rarely seen in basal cell carcinoma, seen only in 2 of our cases composed of big solid nests. Mastropasqua et al¹⁵ also noted vascular invasion with a predominant basaloid pattern of basal cell carcinoma.

The histologic distinction between florid basal cell hyperplasia and basal cell carcinoma is in some cases straightforward and in others a diagnostic challenge (Table 2). As we found in our study, overt signs of malignancy such as perineural or vascular invasion are

uncommon. In addition to the adenoid cystic pattern and large basaloid nests with necrosis being pathognomonic of basal cell carcinoma, we have noted 2 other patterns that were only seen with basal cell carcinoma and none of the 70 cases of florid basal cell hyperplasia reviewed. One was the finding of anastomosing basaloid nests, and nests or tubules centrally lined by eosinophilic cells. A more subjective assessment of architecture that we identified only in basal cell carcinoma was variably small/medium sized nests with irregular shapes (Fig. 10). Infiltrativeness is another characteristic of basaloid malignancy, which in some cases may be difficult to assess. Although readily diagnostic of malignancy, extension of basal cell carcinoma into periprostatic adipose tissue or seminal vesicles is typically seen in resection rather than diagnostic specimens. More commonly, infiltration in basal cell

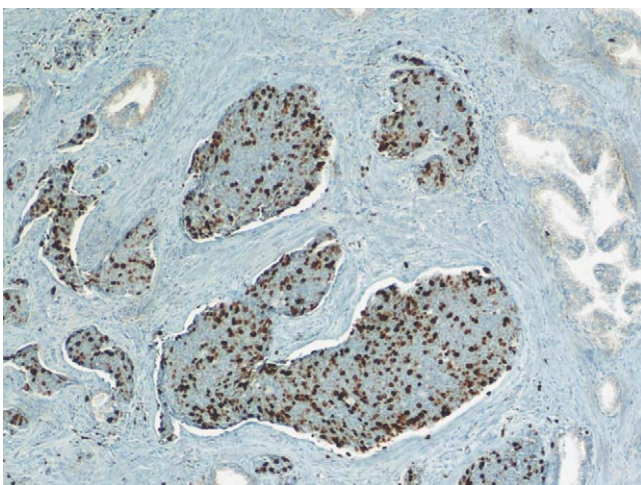


FIGURE 18. Basal cell carcinoma. Elevated ki67 expression.

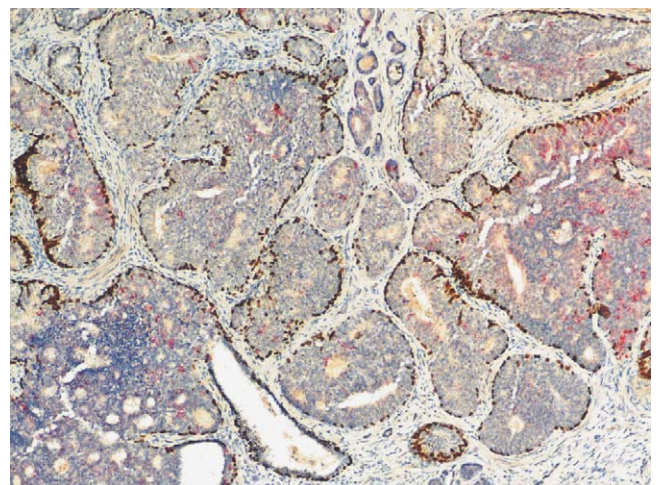


FIGURE 20. Basal cell carcinoma. Periphery of basaloid nests labeled with high molecular weight cytokeratin and p63 (brown chromogen). AMACR is also focally expressed (red chromogen).

TABLE 2. Features of Basal Cell Carcinoma

Large basaloid nests often with necrosis
AC-P pattern
Anastomosing nests
Variably sized nests with irregular shapes
Nests or tubules centrally lined by eosinophilic cells
Perineural or vascular invasion
Extraprostatic extension into adipose tissue or seminal vesicles
Invasion of thick muscle bundles of the bladder neck
Widespread infiltration between benign prostatic glands
Prominent desmoplastic or myxoid stromal reaction
Ki67 staining was > 20%
Strong diffuse bcl2 staining

carcinoma manifests by extension into the thick muscle bundles of the bladder neck. None of the cases of basal cell hyperplasia reviewed had this pattern. A more problematic diagnostic criterion of basaloid malignancy is widespread infiltration of a basaloid lesion between benign prostatic glands. Florid basal cell hyperplasia may also appear infiltrative between benign glands, although it may represent focal basal cell hyperplasia arising amongst benign prostatic glands giving the impression of an infiltrative process. In contrast to basal cell carcinoma, the nests or tubules of basal cell hyperplasia are more evenly and orderly arranged between benign prostate glands and tend not to infiltrate as isolated units but rather as clusters of nests or tubules (Fig. 21). Finally, as has been noted in prior studies, a prominent desmoplastic stromal reaction is another distinguishing feature. Florid basal cell hyperplasia may have a subtle myxoid stromal reaction but lacks the extensive myxoid or desmoplastic reaction that characterizes some basal cell carcinomas.

Immunohistochemical studies may play an adjunctive role in this differential diagnosis. Our study confirmed what others have found, that basal cell markers

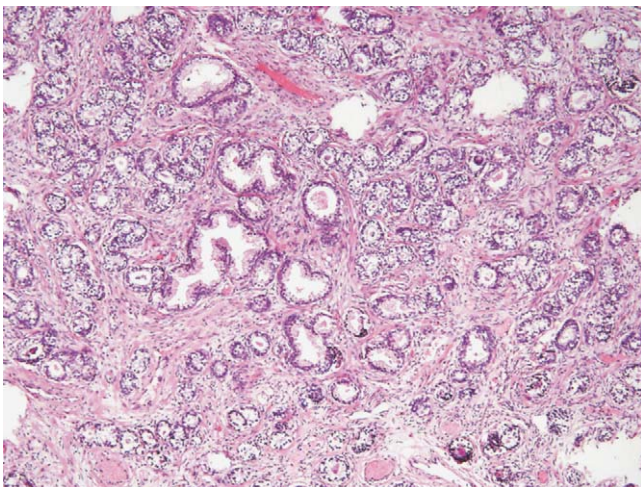


FIGURE 21. Florid basal cell hyperplasia with “infiltrative” pattern, yet the nests are more evenly distributed among benign prostate glands and do not infiltrate as single nests or tubules between benign prostate glands.

stain 100% of the cases of basal cell carcinoma, although to a variable degree, and do not help in the distinction from basal cell hyperplasia.^{18,19,25} In an earlier study,²³ bcl2 was seen to stain basal cell carcinoma more strongly and diffusely than basal cell hyperplasia. All of our cases of basal cell carcinoma reacted with bcl2. Ki67 staining was > 20% in approximately one-half of our cases. Immunohistochemistry for ki67 can be helpful in differentiating basal cell carcinoma from florid basal cell hyperplasia, as basal cell hyperplasia typically shows < 5% positivity.²³ Although it has been hypothesized that both benign and malignant basal cell proliferations should have diffuse staining with bcl2 and a high Ki67 index because the cell of origin in these lesions is the prostatic stem cell in the normal prostate, our data does not support this concept.¹³

Other immunohistochemical studies that have been performed on these tumors include prostate specific markers and c-erb-2. The majority of basal cell carcinomas are not associated with increased serum PSA levels and do not show immunoreactivity for PSA.^{3,8,9,12,16,17} Some authors have found that a minority of basal cell carcinomas stain focally with antibodies against PAP and PSA, but only the inner most luminal epithelium. The basaloid basal cells are typically negative for PSA but may show focal staining with PAP.^{8,25} Recently, immunohistochemistry with c-erb-2 was reported positive in the adluminal inner cells of the nests of basal cell carcinomas, whereas the peripheral cells did not stain.¹⁰ Only 6 of our cases of basal cell carcinoma stained weakly and patchily with AMACR. Immunohistochemistry with AMACR on basal cell carcinomas has not been looked at previously. Yang et al²⁴ found AMACR staining to be negative in basal cells of florid basal cell hyperplasia.

Because of the assumed indolent nature of this neoplasm and the older age of many men in our series, most men did not get definitive therapy beyond the initial diagnostic TURP. Only 7 men received RP. Of these one had a concurrent GS 4 + 4 = 8 acinar adenocarcinoma of the prostate. Five of these 7 men showed EPE of the basal cell carcinoma. One patient underwent an enucleation followed by 2 TURPs for recurrent obstruction, this patient locally recurred with EPE into periprostatic adipose tissue on the TURP specimen. The propensity for basal cell carcinoma to extend out of the prostate cannot be inferred from these few cases given that there may be a selection bias for clinically more advanced cases to undergo RP or repeat surgery.

Overall, only a small subset of basal cell carcinomas behaves aggressively with local recurrences and distant metastases. In previously reported cases, these have been of the adenoid cystic variant.^{11,14,21} In the current study, it was observed that among those with an aggressive behavior the predominant pattern was of large solid nests more often with central necrosis, high Ki67%, and less staining with basal cell markers. The 4 cases that showed metastases, in our study all had this pattern. Of the remaining 4 with large solid nests, 2 received RP, which showed EPE with seminal vesicle invasion in one and a

positive margin in the other (Table 1). We postulate that, similar to adenoid cystic carcinoma occurring in the head and neck, morphology is somewhat predictive of an aggressive behavior.^{5,15,25} In contrast to acinar adenocarcinoma of the prostate, only one of the previously reported metastatic basal cell carcinoma of the prostate^{11,14,16} involved bone. In our series, only one case had bone metastases in addition to spread to the lung and liver.

In summary, basal cell carcinomas are rare tumors with a broad morphologic spectrum. These tumors predominantly show an indolent course with local infiltrative behavior. A small subset behaves aggressively with local recurrences and distant metastases, which can be predicted to some extent based on their morphology.

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