A Rare Case of Multifocal Prostatic Blue Nevus

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Prostatic blue nevus is a rare benign pathologic diagnosis most commonly diagnosed incidentally on many different types of prostate specimens. Blue nevus is the deposition of stromal melanin characterized by spindle cells within the fibromuscular stroma which stains positive for melanin-specific stains Fontana-Masson and S100 and stains negative for CD68, HMB45, and iron stains [1]. Blue nevus is asymptomatic and benign and has been incidentally diagnosed following prostatectomy (11 cases), transurethral resection of the prostate (TURP, 6 cases), autopsy (5 cases), and transrectal ultrasound-guided prostate needle biopsy (TRUS PNBx, 2 cases) (Table 1).

2. Case Presentation

A 52-year-old healthy Hispanic male presented to an outpatient urology clinic with an elevated prostate-specific antigen (PSA) of 4.1 along with mild obstructive lower urinary tract symptoms. There was no family history of prostate cancer. The physical examination including the digital rectal examination was unremarkable. The patient was seen again 3 months later with a PSA of 4.3 and after discussion with the patient he elected to undergo a 12-core TRUS PNBx. The following month when the biopsy was performed, the PSA had slightly decreased to 3.4. The prostate was visualized in the sagittal and transverse planes via ultrasound probe and was unremarkable. Volume was measured to be 33 cm³ (PSA density of 0.10 ng/mL/g). Final pathology demonstrated blue nevus in one out of six cores on the right and two out of six cores on the left. On microscopic analysis with hematoxylin-eosin stain, individual heavily pigmented spindle cells distributed in between prostatic stroma and glands were noted (Figures 1 and 2). The remaining specimen consisted of benign prostatic tissue with postatrophic hyperplasia and chronic inflammation. The patient's voiding symptoms improved with terazosin and no further workup was undertaken. The patient is now being followed up for routine prostate cancer surveillance as per the American Urological Association (AUA) guidelines [26].

3. Discussion

Blue nevus is a rare lesion of dermal melanocytes most commonly found in the skin, but it has been reported in
Table 1: Literature review of blue nevus cases.

| Source, year | Procedure        | Age (years) | Race   | Extent |
|--------------|------------------|-------------|--------|--------|
| Nigogosyan et al. [2], 1963 | Autopsy         | 50          | NA     | Focal  |
| Guillan and Zelman [3], 1970   | Autopsy         | NA          | NA     | Focal  |
| Jao et al. [4], 1971      | Prostatectomy   | 76          | W      | Focal  |
| Gardner and Spitz [5], 1971 | Autopsy         | 20          | AA     | Focal  |
| Block et al. [6], 1972     | Prostatectomy   | 66          | W      | Focal  |
| Langley and Weitzner [7], 1974 | Autopsy      | NA          | NA     | Focal  |
| Tannenbaum [8], 1974       | Autopsy         | 67          | AA     | Focal  |
| Rios and Wright [9], 1976  | Prostatectomy   | 65          | AA     | Focal  |
| Kovi et al. [10], 1977     | TURP            | 68          | AA     | Focal  |
|                            | TURP            | 76          | W      | Focal  |
| Botticelli et al. [12], 1989 | Prostatectomy | 69          | W      | Focal  |
|                            | Prostatectomy   | 70          | W      | Focal  |
|                            | Prostatectomy   | 66          | NA     | Focal  |
| Lew et al. [13], 1991      | Prostatectomy   | 80          | AA     | Focal  |
| Martinez Martinez et al. [14], 2017 | Prostatectomy | 81          | NA     | Focal  |
|                            | Prostatectomy   | 69          | NA     | Focal  |
| Vesga et al. [15], 1995    | TURP            | 58          | NA     | Focal  |
| Redondo Martinez et al. [16], 1998 | TURP   | 58          | NA     | Focal  |
| Cuervo Pinna et al. [17], 2001  | Prostatectomy | 71          | NA     | Focal  |
| Di Nuovo et al. [18], 2002 | Needle Biopsy  | 66          | NA     | Focal  |
| Humphrey [19], 2003        | Needle Biopsy   | 70          | NA     | Focal  |
| Anderco et al. [20], 2010  | TURP            | 69          | NA     | Focal  |
| Kudva and Hegde [21], 2010 | TURP            | 53          | NA     | Focal  |
| Raspolini et al. [22], 2011 | Prostatectomy | 64          | NA     | Focal  |
| Montalvo and Redrobán [23], 2013 | Prostatectomy | 63          | H      | Focal  |
| Ponte et al. [24], 2014    | Prostatectomy   | 69          | NA     | Multifocal |
| Ponte et al. [25], 2016    | Prostatectomy   | 74          | NA     | Multifocal |
| Present report             | Needle biopsy   | 52          | H      | Multifocal |

AA, African American; H, Hispanic; W, non-Hispanic White; TURP, transurethral resection of the prostate.

Figure 1: Low-power view of blue nevus in the prostate as a cluster of pigmented spindle to round cells in the stroma (hematoxylin-eosin, original magnification: ×10).

Figure 2: Individual heavily pigmented spindle cells distributed in between prostatic stroma and glands (hematoxylin-eosin, original magnification: ×20).

The appearance of this lesion in nonintegumentary tissues is not fully understood; the prevailing hypothesis is that melanoblasts originate in the neural crest and migrate with the mesoderm into connective tissue, where they remain latent until maturing into melanocytes [28]. Proliferation
induced by inflammation or other insults of these latent melanoblasts can explain acquired cases of blue nevi [29]. An alternative hypothesis proposes development from the neoplastic growth of Schwann cells of dermal nerves which became melanogenetic as they proliferated [30].

Blue nevus grossly appears as multiple brown to black streaks or nodules that range in size from 0.1 cm to 2.0 cm [1]. Microscopically, prostatic blue nevus consists of stromal cells that contain finely granular brown or black pigment, which may also be seen in the extracellular matrix [11]. The cells can extensively infiltrate the surrounding fibromuscular stroma individually or as irregularly clustered collections [4]. The pigment-laden cells are usually spindle in shape with bipolar, elongated dendritic cytoplasmic processes but can also be round, ovoid, or polygonal (Figures 1 and 2). The nuclei have been described as centrally located and often obscured by the abundant melanin present in the cytoplasm [2]. It is also important to recognize the benign nature of these lesions and not confuse them with more aggressive melanocytic lesions of the prostate such as malignant melanoma. Hypercellularity, diffuse atypia, increased mitotic activity, and positive immunostaining for HMB45 should help in differentiating malignant melanoma from blue nevus.

4. Conclusion

Review of the literature indicates that blue nevus typically presents as a single focus and is characteristically diagnosed on TURP and prostatectomy specimens. Although no risk factors for blue nevus have been identified, our discovery of just the second case in a Hispanic male may suggest variability in risk among different races/ethnicities [23]. Of the other 34 reported cases of blue nevus, only two have shown multifocal blue nevus [24, 25]. Diagnosis is most often made on prostatectomy or TURP specimens; however, there have been two reported cases documenting diagnosis by TRUS PNBx, making this the third reported case [18, 19]. As in all other cases, blue nevus presented in an asymptomatic fashion. The importance of this case lies in the rarity of such a diagnosis as it is highly likely that both urologist and pathologist alike have not come across such a diagnosis. The recognition of the benign nature of blue nevus and multifocal blue nevus need to be emphasized as further workup and surveillance outside of routine prostate cancer screening carries no benefit. As always, all routine prostate cancer screening should follow the shared decision-making mantra endorsed by the AUA [26].

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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