“THE TWO SIDES TO PROSTATE HEMORRHAGE”

Rajan T. Gupta, M.D.
Kurren Mehta, B.S.
History

- 56 yo with prostate cancer
- PSA level of 11.44 ng/mL
  - PSA density 0.38 ng/mL^2
- TRUS-guided biopsy:
  - Gleason 3+3=6 (throughout right gland and left mid-apex)
- Presented to Duke for mpMRI at 3T with endorectal coil
- Two sites being shown on imaging...

Case courtesy of Rajan T. Gupta, MD; Duke University Medical Center
Axial T2W:
• Mildly decreased signal bilaterally with poorly defined margins in bilateral PZ (arrows)

ADC and High b-value DWI:
• Lack of restricted diffusion in bilateral PZ

PI-RADS 2
T2W:
- Decreased signal bilaterally with poorly defined margins in bilateral PZ (arrows)

ADC and High b-value DWI:
- Lack of restricted diffusion in bilateral PZ

Gradient-echo T1W:
- Increased signal in bilateral PZ, consistent with *post-biopsy hemorrhage*
T2W:
• Decreased signal bilateral PZ at apex, most notably at midline (arrows)

ADC map and high b-value DWI:
• Corresponding restricted diffusion in medial posterior PZ, suspicious for clinically significant prostate cancer

PI-RADS 4
Case courtesy of Rajan T. Gupta, MD; Duke University Medical Center
Gradient-echo T1W:

- Bilateral diffuse areas of high signal in posterior lateral and anterior peripheral zone consistent with post-biopsy hemorrhage
- Area of clinically significant prostate cancer delineated by “hemorrhage exclusion sign”
  - Corresponding low signal on T1W in posterior PZ at midline apex

Case courtesy of Rajan T. Gupta, MD; Duke University Medical Center
“Hemorrhage exclusion sign”:
- Can be seen with patient’s biopsy-proven Gleason 3+3=6 cancer
- However, given degree of restricted diffusion in this area, there is clinical suspicion of higher grade Gleason 7+ tumor

Recommendation made to repeat biopsy via MRI-ultrasound fusion for disease grading vs. radical prostatectomy

Case courtesy of Rajan T. Gupta, MD; Duke University Medical Center
Post-biopsy imaging of prostate gland:

- Can prove technically challenging due to signal changes from biopsy site bleeding
- Recommend waiting 8-12 weeks after biopsy
- Bleeding after biopsy is generally concentrated in the PZ:
  - This can lead to decreased T2W signal intensity, which may be mistaken for a tumor
  - There should not be associated markedly restricted diffusion in these areas which should aid in accurate diagnosis of hemorrhage vs. tumor

*Case courtesy of Rajan T. Gupta, MD; Duke University Medical Center*
Post-biopsy imaging of prostate gland:

- Bleeding may also distort PZ and limit optimal staging
- “Hemorrhage exclusion sign” can be helpful to delineate tumor
SAR Prostate DFP – Teaching Case of the Week 12/31/18

THANK YOU

Rajan T. Gupta, M.D.
Associate Professor of Radiology & Surgery
Director of Imaging, Duke Prostate & Urologic Cancer Center
Director, Abdominal Imaging Fellowship Program
Duke University Medical Center & Duke Cancer Institute
rajan.gupta@duke.edu • @RajanTGuptaMD