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Positive Predictive Value of Prostatic Multiparametric MRI in Patients with High PSA Levels: Nairobi Experience

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Aim: To correlate positive mp- MRI findings with histological diagnosis in patients with high PSA levels.

Methods: A prospective study recruited 50 patients with raised PSA and suspicious lesions on rectal examination who underwent mp-MRI examination between May to November 2016. The examination was conducted using 1.5T Philips MRI machine. Sequences for study were T2W, diffusion weighted imaging (DWI) and dynamic contrast enhancement (DCE). Lesions were graded according to the prostate imaging and reporting and data system (PI-RADS). Histological diagnosis was made following targeted biopsy on lesions having PI-RADS 3,4 and 5 characteristics. Two cut-off sets, one at PI-RADS 3 and another at PI-RADS 4 were compared for statistically significant difference on the positive predictive value (PPV).

Results: The mean age of the patients was 68.9 years (SD \pm 10.7). The mean PSA level was 53.7 (\pm 67.7). The total number of PI-RADS 3, 4 or 5 lesions was 65. On histopathology, 59 of these lesions turned to be positive for prostatic carcinoma giving a positive predictive value of 90.7%. PI-RADS 3 (intermediate) lesions alone were seven (10.8%). PI-RADS 4 or 5 (higher probability for malignancy) lesions were 58 with 56 of them being positive on histopathology giving a positive predictive value of 96.6%. Comparison of the PPVs for cut offs at PI-RADS 3 and 4 was statistically significant (P=0.1875).

Conclusion: From our experience, prostatic mp-MRI has a high positive predictive value for both PI-RADS 3 and 4 cut-offs in patients with raised PSA levels. However, there is statistically significant difference if PI-RADS 3 lesions are omitted.

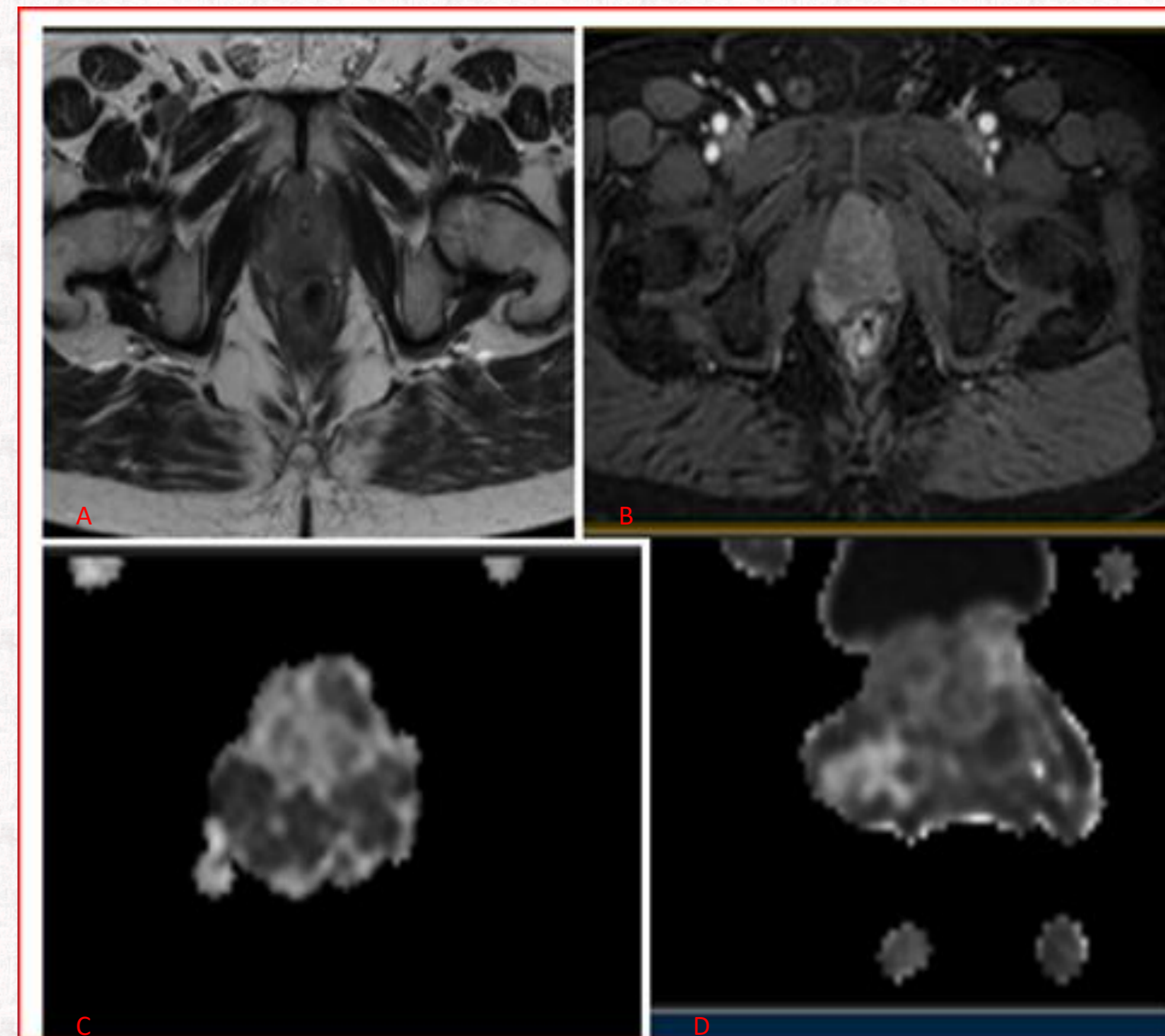


Fig 1: A 67 year old with PSA 33ng/ml, mp-MRI characteristics corresponded with histology (Gleason score 4+5). A: T2W B: DCE (Early enhancement) C: ADC Map D: DWI

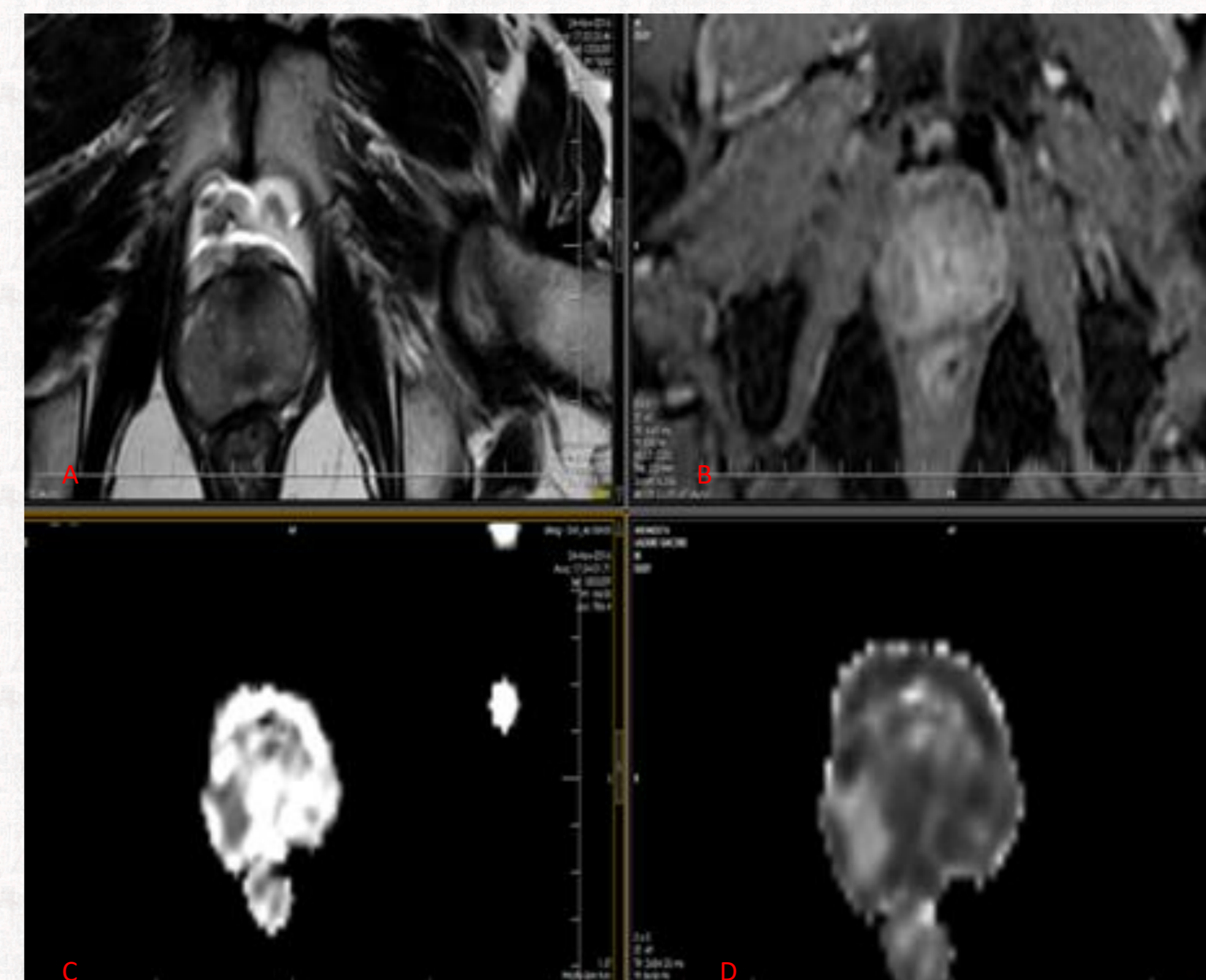


Fig 2: A 74 year old with PSA levels 178 ng/ml and typical mp-MRI features that corresponded with histology. A: T2W B: DCE (Rapid washout) C: ADC Map D: DWI

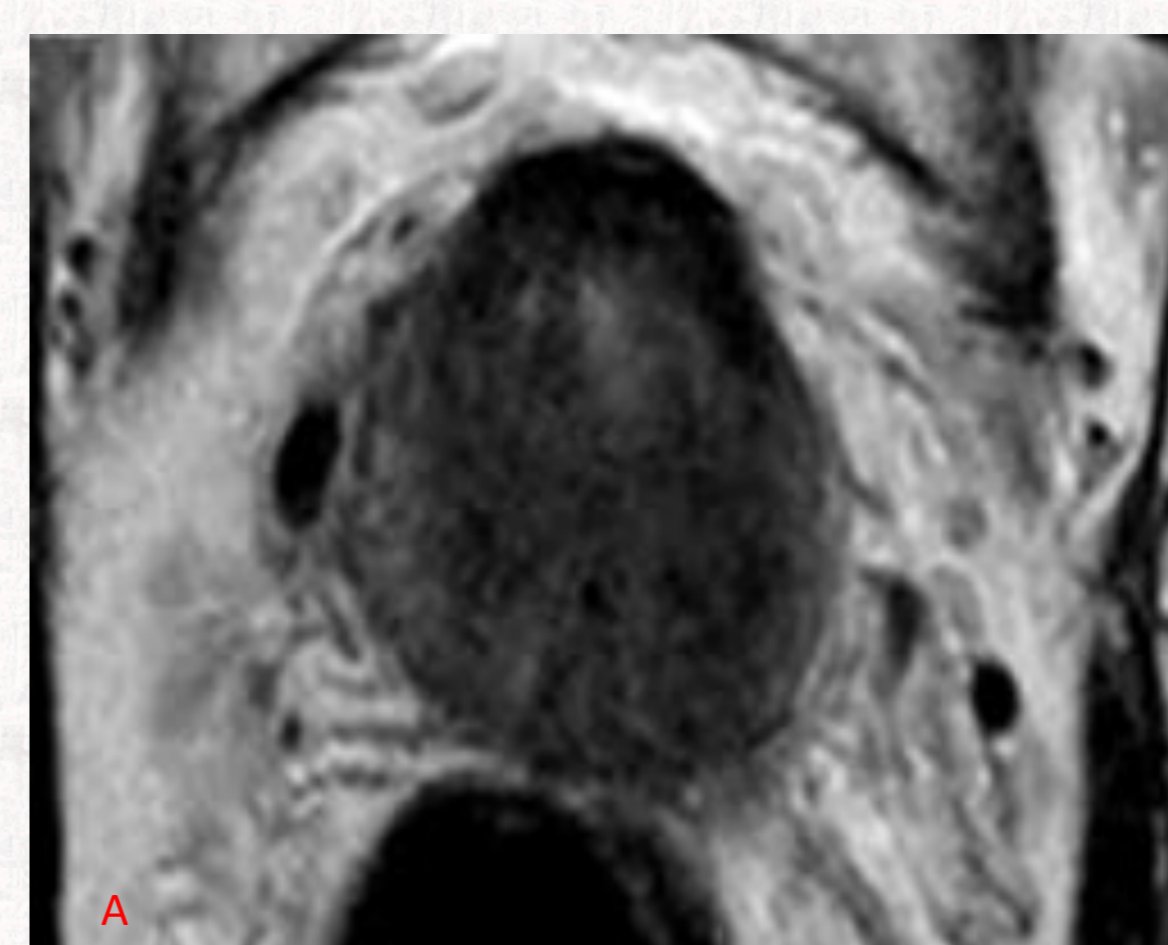


Fig 3: The great mimicker: mp-MRI features in a 49 year old male whose histology turned out to be **chronic prostatitis**. PSA was 17.65 ng/ml. A: T2W B: ADC Map C: DWI D: DCE curve that radiologically gave it to a benign lesion.

