

Role of multi-parametric MRI in Active Surveillance protocol reclassification risk

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Objectives

In this preliminary work we evaluate association between upgrading reclassification at repeated biopsies and mpMRI parameters.

Patients and Methods

Since 2005 AS patients were enrolled in the most suitable protocol (institutional protocol SAINT or International protocol PRIAS). In 2016 new protocol was introduced (SPRINT) and mpMRI were performed to improve inclusion criteria and follow up monitoring.

Eligibility criteria:

- clinical stage \leq T2a
- initial PSA (iPSA) \leq 10 ng/mL
- Gleason Pattern Score GPS \leq 3+3, \leq 25%
- positive cores with a maximum core length containing cancer \leq 50% (SAINT) or \leq 2 positive cores. 3+ positive cores if mpMRI and fusion biopsy confirms GS \leq 3+3
- PSA density $<$ 0.2 ng/mL/cm³ (PRIAS)

Follow up schedule:

- PSA every 3 month
- digital rectal examination every 6 month
- repeat biopsies at year 1, 4, 7, and every 5 years in PRIAS protocol and at year 1, 2 then every 2 years up to 8th year and then every 5 years in SAINT protocol.
- Unplanned mpMRI were performed in SAINT and PRIAS protocols if progression was suspected. SPRINT protocol introduce mpMRI at inclusion (+/- 6 mos) and during follow-up with a modulated schedule based on result of the previous examination.

mpMRI were evaluated using PiRads V2 system. Patients who scored a PiRads \geq 3 at mpMRI performed a Fusion target biopsy on suspected lesions. Standard mapping for biopsies consisted in 2-4 target and 12 random samples.

Conclusions

This preliminary work suggests fusion PiRads 5 and maximum diameter of MRI lesions as the only two parameters predicting gleason upgrading to pattern 4 in our AS protocol.

Results

A total of 96 cases were considered for the analysis

- median Volume at mpMRI was 50 cc (range 17-155 cc)
- patients had a median number of 2 lesions (range 1-4)
- median higher ADC was 0.67 (range 0.45-0.9)
- median diameter of lesion was 0.9cm (range 0.5-2.8 cm)
- 7 patients scored a PiRads 5, 40 resulted to have a PiRads 4 and 44 had a Pirads 3.
- 17 patients had at least 1 lesion in transitional zone, 36 in peripheral area and 24 in both areas
- 49 patients scored a GPS 3+3 at biopsy, 12 had GPS 3+4, 5 scored a GPS 4+3 and 6 patients scored a GPS 4+4 (34, 9, 3 and 5 considering only target cores)

Association with upgrading (chi-square test):

	Any core	Target core
maximum lesion diameter (quartile)	P = 0.0228	P = 0.0311
PiRads (5 vs <5)	P = 0.0586	P = 0.0311

Univariate logistic regression confirmed PiRads 5 and maximum diameter of the lesion (P=0.0455 and 0.0069 respectively, P=0.0142 and P=0.0093 if only target cores were considered).