

## IMAGING

# MRSI can potentially differentiate between aggressive and indolent prostate cancer

The main drawback of the well-documented increase in prostate cancer detection resulting from widespread PSA screening is the overtreatment of indolent disease. Thus, the ability to identify patients with more-aggressive disease would help prevent overtreatment of those with low-risk tumors. Transrectal biopsy can confirm the presence of prostate cancer and determine the Gleason score of the tumor, but often underestimates the true aggressiveness of the disease.

Magnetic resonance spectroscopic imaging (MRSI) can detect tissue levels of specific metabolites, such as citrate, choline and creatine. The ratios of choline plus creatine to citrate (Cho + Cr: Cit) and choline:creatine (Cho:Cr) have previously been shown to correlate with Gleason score when using 1.5 T MRI with an endorectal coil, but not when body array coils are used alone. Kobus and colleagues retrospectively tested the ability of these ratios to

differentiate between high-grade and low-grade prostate tumors using high-field (3 T) MRSI with an endorectal coil.

“Both [ratios] correlated significantly with tumor aggressiveness...”

43 Patients with a total of 53 biopsy-proven prostate cancer foci underwent MRSI prior to radical prostatectomy. The Gleason score assigned after analysis of the prostatectomy specimen was used as the gold standard, and the aggressiveness of each tumor was categorized as either low, intermediate or high. Receiver operator characteristic (ROC) curves were used to assess the accuracy of each metabolite ratio for differentiating tumors of different aggressiveness.

Both the maximum Cho + Cr: Cit ratio and the maximum Cho:Cr ratio

correlated significantly with tumor aggressiveness ( $r = 0.27$  [ $P = 0.02$ ] and  $r = 0.31$  [ $P < 0.01$ ], respectively), and both ratios differentiated low-grade from combined intermediate-grade and high-grade tumors (area under ROC curve 0.70 and 0.74, respectively).

The authors conclude that 3 T MRSI with an endorectal coil has the potential to provide a noninvasive, *in vivo*, individualized and accurate assessment of the aggressiveness of a patient's prostate cancer. Although further prospective study is required, such an approach could help identify patients who would benefit most from radical prostatectomy.

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**Original article** Kobus, T. *et al.* *In vivo* assessment of prostate cancer aggressiveness using magnetic resonance spectroscopic imaging at 3T with an endorectal coil. *Eur. Urol.* doi:10.1016/j.eururo.2011.03.002