

#140 So Yeon Pak and Aaron Huang

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The Concordance Between Conventional Computed Tomography and Nuclear Medicine Bone Scintigraphy in the Identification of Prostate Cancer Metastases to the Bone

Intro:The AUA/ASTRO/SUO 2017 Guidelines recommend cross sectional imaging(CT or MRI) and Nuclear Medicine Bone Scan(NMBS) for staging high-risk localized prostate cancer(PCa). We compared detection rates of OM between CT and NMBS in men receiving initial staging scans for PCa.

Methods:Men who underwent NMBS and CT as initial imaging workup for metastatic PCa at Kings County Hospital and Downstate Medical Center from 2014-2019 were identified with retrospective chart review. Exclusion criteria were patients with PCa and additional malignancy, undergoing imaging for recurrence, dual scans ≥ 3 months apart, and those on androgen deprivation therapy. Presence of OM was based on radiologic interpretation reports, confirmed with bone biopsy or clinical follow up. Cohen's kappa(κ) was used to assess concordance. Sensitivity, specificity, PPV and NPV were calculated. All analysis was conducted with IBM SPSS Statistics 27.

Results:141 patients with dual scans were included. Table 1 shows patient characteristics. Concordant imaging results were found in 123(87.2%) patients($\kappa=0.704$).18 patients(12.8%) had discordant findings(Figure 1).When stratified by concordant pairs, CT and NMBS accurately diagnosed 88/92(95.7%) non-metastatic cases and 31/31(100%) metastatic cases, respectively. Amongst the entire cohort, CT accurately diagnosed 97/104(93.3%) and 32/37(86.5%) non-metastatic and metastatic cases, respectively. NMBS accurately diagnosed 91/104(87.5%) and 36/37(97.3%) of non-metastatic and metastatic cases, respectively. A NPV of 95.1% and PPV of 91.9% were calculated for CT.

Conclusions:Our study shows high concordance, good inter-rater reliability($\kappa=0.704$), and comparable specificity and sensitivity between CT and NMBS in detecting OM in PCa. Potential benefits of CT as a singular staging tool for PCa include soft tissue retroperitoneal staging, serendipitous detection of abdominal/pelvic pathology, and reduced healthcare costs secondary to clinically redundant evaluations.

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