Abstract

INTRODUCTION: To evaluate the detection rate of positive choline PET-CT and its clinical role in assisting with management decisions and the correlation between positive choline PET-CT and clinical/pathological parameters in prostate cancer patients with biochemical relapse following radical prostatectomy.

METHODS: This was a longitudinal observational pilot study of 34 patients who received choline PET-CT scans with biochemical relapse after radical prostatectomy. Variables including peak PSA, PSA doubling time (DT), Gleason score, age, initial PSA at diagnosis, use of ADT prior to PET and initial clinical staging were statistically analysed to assess for independent predictive factors for positive PET findings.

RESULTS: Choline PET-CT was positive in 38.2% of patients (13/34). The only statistically significant predictor for positive PET-CT was the use of ADT prior to PET-CT, with OR 18.7 (95% CI, 2.87-122.45), P < 0.01. Mean peak PSA for patients with positive PET-CT was 5.5 ± 4.8 ng/mL. Patients with positive PET-CT had a mean PSA DT of 5.1 ± 3.8 months and mean total Gleason of 7.6 ± 0.8. Although these variables were not statistically significant, they showed a tendency towards significance. At Receiver Operator Characteristics (ROC) analysis, a peak PSA value of 1.65 ng/mL and PSA DT of 4.4 months were determined to be the optimal cut-off values predicting positive PET-CT.

CONCLUSION: Choline PET-CT has its potential as a diagnostic modality enabling the detection of occult prostate cancer recurrence and to differentiate localised disease from systemic disease thus guiding management. Use of ADT prior to PET-CT is a significant predictor of positive PET-CT. Patients with a short PSA DT, high-peak PSA and high Gleason score should also be considered for choline PET-CT.

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KEYWORDS: biochemical relapse; fluorocholine PET-CT; post-radical prostatectomy; prostate cancer