

Abstract

Background

The aim of this study was to investigate the reproducibility of intra- and inter-observer interpretation of [^{18}F]choline positron emission tomography/computed tomography examinations in patients suffering from biochemically recurrent prostate cancer following curative treatment.

Methods

A total of 60 patients with biochemical recurrence after curative treatment were included in this bicentric study. The interpretations were based on a systematic analysis of several anatomic regions and all the four nuclear medicine physicians used identical result consoles. The examinations were interpreted with no knowledge of the patients' clinical context. Two months later, a second interpretation of all these examinations was performed using the same method, in random order.

Results

To evaluate local recurrences, when the prostate is in place, the results showed moderate inter- and intra-observer reproducibility: concordance of all 4 physicians has a Fleiss' kappa coefficient of 0.553 with a confidence interval of (0.425 to 0.693). For patients who had had a prostatectomy, there was excellent concordance for the negative examinations. For the lymphatic basin, inter- and intra-observer reproducibility was excellent with a Fleiss' kappa coefficient of 0.892 with a confidence interval of (0.788 to 0.975). The lymphatic sub-group analysis was also good. For the lymphatic groups in the right or left hemi-pelves, all Fleiss' kappa and Cohen's kappa coefficients are varying from 0.760 to 1 with narrow confidence intervals from (0.536 to 0.984) to (1 to 1) in favour of good/excellent inter-observer reproducibility. To evaluate bone metastasis, inter-observer reproducibility was good with a Fleiss' kappa coefficient of 0.703 and a confidence interval of (0.407 to 0.881).

Conclusion

Our study is at time the only one on the reproducibility of interpretation of [^{18}F]choline positron emission tomography/computed tomography examinations, which is a key examination for the treatment of patients suffering biochemical recurrence of prostate cancer. Interpretation of the [^{18}F]choline positron emission tomography/computed tomography examination is not so useful at prostate level in patients not previously treated with prostatectomy but has a great interest on patients treated by prostatectomy. It showed good concordance in the interpretation of sub-diaphragmatic lymphatic recurrences as well as in bone metastasis.