LAPAROSCOPIC RADICAL PROSTATECTOMY USING A REAL-TIME LYPHANGIOGRAPHY WITH TRANSPERINEAL INJECTION OF IODOCYANINE GREEN: RESULTS FROM A PROSPECTIVE STUDY

INTRODUCTION & OBJECTIVES

Current standard imaging procedures have limited ability to predict lymph node metastasis (LNM) in clinically localized prostate cancer (PCa) and extended pelvic lymph node dissection (ePLND) during radical prostatectomy (RP) remains the most accurate staging procedure. The primary aim of this study is to evaluate the effectiveness of indocyanine green (ICG)-guided ePLND to assess regional LN status in patients who underwent RP. Secondary objective is to evaluate the potential role of a selective ICG LND in patients with ≤2 LNs which according to the literature are those who may more benefit from ePLND.

MATERIALS AND METHODS

Data about 226 consecutive patients underwent laparoscopic RP with ICG-guided ePLND at our Department were prospectively included. A solution of 25 mg ICG in 5 ml sterile water was transperineally injected. PLND started with the ICG stained nodes followed by extended template. Primary outcome measures were sensitivity (S), negative predictive value (NPV) and likelihood ratio of a negative test (LRn) of ICG-guided procedure. To our knowledge this study shows data about the largest cohort of patients underwent ICG-guided ePLND.

RESULTS: clinicopathological characteristics of the study cohort

• Overall, median age of patients was 64.8 years with a median PSA of 6.6 ng/ml. Extracapsular disease occurred in 50.9% of patients, Gleason score ≥8 was reported in 11.9% cases and R1 rate was 24.3%.

Table 1 – preoperative, surgical and pathological data in the study population

Table 2 – Diagnostic performance of ICG guidance at patient’s level

Table 3 – Diagnostic performance of ICG guidance at node’s level

Table 4 – Selective ICG-LND in patients with oligometastatic nodal disease (≤2 LNs)

RESULTS: diagnostic performance of ICG-guided procedure

• Median number of nodes retrieved was 22(IQR 16-27) and median number of ICG stained per patient was 6(IQR 4-9).

• Overall 4939 nodes were removed and 1599(32.4%) were fluorescent in vivo.

• Node-positive disease was found in 58(25.7%), of which 53(91.4%) had some of the metastatic LNs stained by ICG, while 5(8.6%) were false negative. Therefore 97.8% of the sample was properly classified by ICG-guided ePLND (S: 91.4%, NPV: 97.1% and LRn: 8.6%).

• Considering 209(92.5%) patients with 0, 1 or 2 metastatic LNs, 39(18.7%) had a node-positive disease of which 34(87.2%) had metastatic ICG stained LNs. Again, 97.6% were properly classified by ICG approach (S: 97.2%, NPV: 97.1% and LRn: 12.8%). These 39 node-positive patients had a total of 48 metastatic LNs and all except 9(18.8%) were fluorescent in vivo (S: 81.2%).

CONCLUSIONS

• ICG guidance correctly stage almost 98% of cases.

• Its high NPV may will allow to avoid ePLND as soon as an accurate intraoperative analysis is available.

• Among those patients in whom the LND may have a potentially curative role, ICG alone would have lost only 9 metastatic LNs. This suggest that maybe there is a place for selective LND in patients with limited LN metastatic burden.