^{18}F-FDG PET/CT-based Metabolic Metrics in Recurrent Tumors of Ovarian Clear Cell Carcinoma and Their Prognostic Implications

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BACKGROUND

- Glucose metabolism has been suggested as a therapeutic target in ovarian clear cell carcinoma (CCC).
- We attempted to clarify ^{18}F-FDG PET/CT-based metabolic metrics in the recurrent ovarian CCC patients and their prognostic values.

METHODS

- Quantitative metabolic parameters included maximum standardized uptake value (SUVmax), metabolic tumor volume (MTV) and total lesion glycolysis (TLG).
- Two different methods were employed for defining the threshold SUV to delineate MTV: 1) SUV of 2.5 (designated as MTV); 2) a fixed ratio including 40% (MTV40), 50% (MTV50) and 60% (MTV60) of SUVmax.
- The Kaplan-Meier model and Cox regression were used in survival analysis.

RESULTS

- Among the 35 patients, platinum-resistant recurrence accounted for 34.3% and the median progression-free survival was 13 months (range, 2-135).
- Fifteen (42.9%) patients presented with single tumor recurrence, while 51 recurrent lesions were identified, with the most common sites in pelvis (29.4%), followed by lymph node metastases (19.6%) and peritoneal carcinomatosis (15.7%).
- Except four patients with FDG-inavid tumor, the median SUVmax of the 31 patients with high glucose metabolic activity was 7.10 (range, 3.00-20.60).
- After a median follow-up of 36.5 months (range, 7-155), 22 patients (64.7%) were dead from disease. The median post-relapse survival (PRS) was 17 months (range, 4-126).
- High TLG60 level was associated with shorter overall survival (OS) (P=0.044) and PRS (P=0.031) on univariate analysis, while retained significance on multivariate analysis for OS (P=0.024).

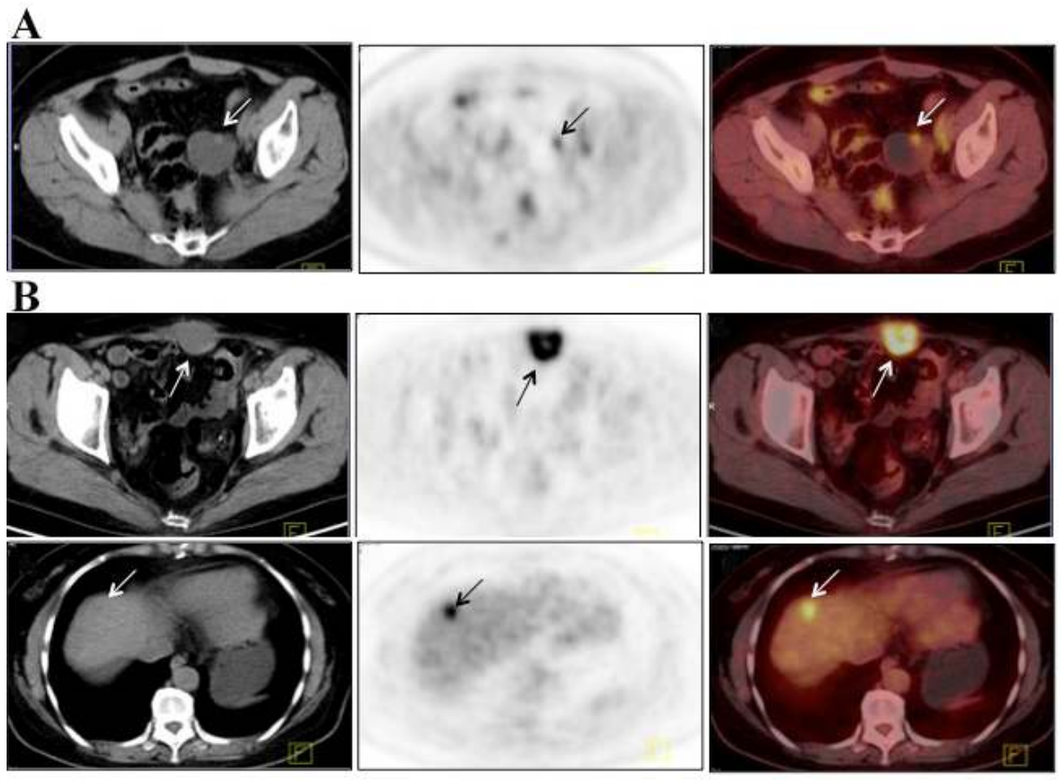

Figure 1.Representative PET/CT images. Fig 1A：The patient had vaginal cuff recurrence. The SUV max, MTV60 and TLG60 was 4.1, 0.98mL and 3.19g, respectively. The overall survival (OS) and post-relapse survival (PRS) was 41 and 39 months, respectively. Fig 1B：In another patient, the recurrent tumors were located in the abdominal wall and liver. The SUV max, MTV60 and TLG60 was 13.4, 9.03mL and 82.76g, respectively. The OS and PRS was 12 and 6 months, respectively. Abbreviations: MTV: metabolic tumor volume; TLG: Total lesion glycolysis.

CONCLUSIONS

- PET/CT-based metabolic volumetric parameters might be predicators for survival in recurrent ovarian CCC patients.

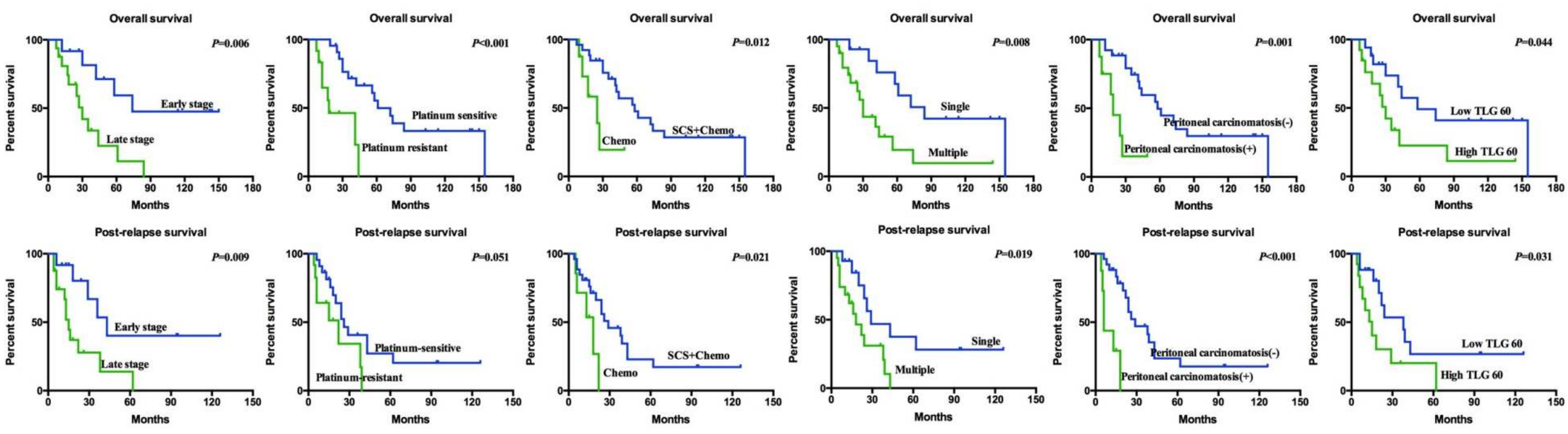

Figure 2. Kaplan-Meier survival curves. Abbreviations: SCS: Secondary Cytoreduction Surgery；Chemo: Chemotherapy; TLG: Total lesion glycolysis.

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