



Metabolic Tumor volume (MTV) in Lymphoma

-by Dr. Nusrat Shaikh

Metabolic tumor volume (MTV) refers to the metabolically active volume of the tumor calculated using FDG PET/CT. In contrast to the SUVmax, the MTV more accurately reflects tumor burden. It has been shown to be useful in predicting patient outcome, the objective of which is to guide clinicians to make a reasonable treatment plan [1].

MTV measures the volume of FDG avid disease, for which three-dimensional regions of interest are drawn (typically by auto segmentation using computer software) around individual lesions. Volumes for all lesions are then added to derive the total body metabolic tumor volume (TMTV).

High tumor burden status regardless of a bulky lesion is an important prognostic factor in patients with non-Hodgkin's lymphoma [2]. A high MTV status is associated with poor prognosis in early-stage Hodgkin's lymphoma. In the study by Meignan et al [3], the 2-year progression free survival was 58% in patients with TMTV > 510 cm³ and 87% in patients with TMTV < 510 cm³.

High baseline TMTV and a persistently positive FDG-PET scan after induction therapy are both equally independent prognostic factors for progression free survival and overall survival [4]. Baseline TMTV on FDG PET/CT has the advantage of providing this prognostic information at the outset of treatment and the treatment strategy can be determined according to the MTV status.

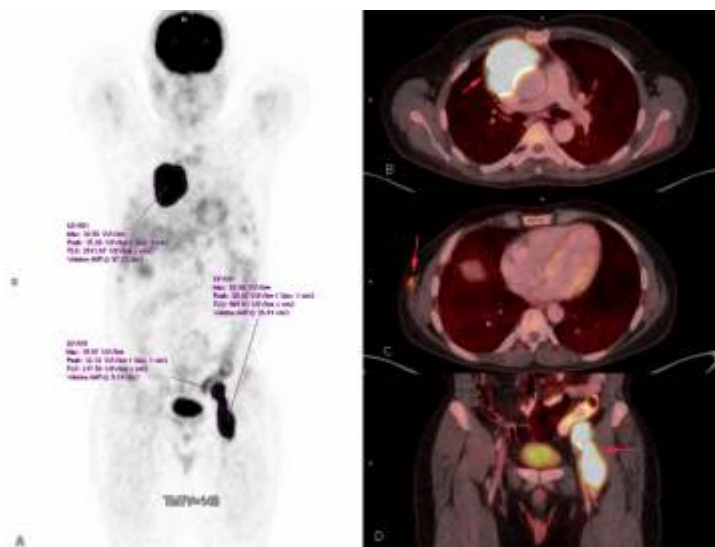


Fig 1 (A-D): 49-years old man recently diagnosed with follicular lymphoma. Coronal PET image (A) shows focal increased metabolic activity in the mediastinum, right chest wall and left iliac and femoral nodes with corresponding total metabolic tumor volume (TMTV) = 143. Axial fused PET/CT images show active soft tissue in the anterior mediastinum (arrow in B), the right chest wall nodule (arrow in C) and the left external iliac and superficial femoral lymph nodes (arrow in D).



At a glance:

- ◆ Metabolic tumor volume (MTV) is the total volume of metabolically active disease on PET/CT.
- ◆ It is a prognostic factor, with high MTV implying poor prognosis.
- ◆ High MTV after induction therapy also implies poor prognosis.

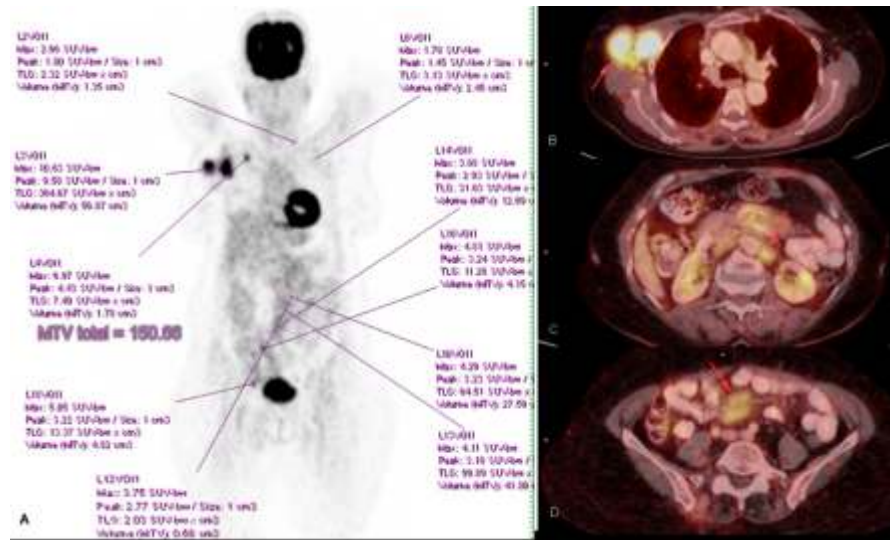


Fig 2 (A-D): 73-years old woman recently diagnosed with non-Hodgkin's lymphoma. Coronal PET image (A) shows multifocal areas of increased metabolic activity in the supraclavicular, right axillary and abdomino-pelvic regions with a total metabolic tumor volume (TMTV) = 150. Axial fused PET/CT images show metabolically active enlarged right axillary lymph nodes (arrow in B), left para-aortic soft tissue (arrow in C) and mesenteric lymph nodes (arrow in D).

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Owner, Printer & Publisher: Dr. Bhavin Jankharia

Published at: Dr. Jankharia's Imaging Centre

Bhaveshwar Vihar, 383, S.V.P. Road, Prarthana Samaj, Charni Road, Mumbai 400 004.