

## Critical evaluation of sentinel lymph node biopsy in pT1b and pT2a melanoma: a nationwide population-based study

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### Abstract

#### Background

Sentinel lymph node biopsy (SLNB) is an important staging procedure for patients with melanoma and determines eligibility for adjuvant immunotherapy. For patients with pT1b or pT2a melanoma, the risk of finding sentinel node (SN) metastases is low (7- 13%). According to the 8th edition of the American joint committee on cancer, these patients can only be upstaged to stage IIIA following a positive SN (unless  $\geq 4$  sentinel nodes are metastatic). However, for stage IIIA, only patients with a tumour burden  $>1$ mm are candidates for immunotherapy. This implies that a minority of patients will be eligible for immunotherapy. This study aims to determine the percentage of patients with pT1b or pT2a becoming eligible for adjuvant therapy following SLNB.

#### Methods

A nationwide, population-based study was conducted using data from Palga: Dutch Pathology Databank. Patients diagnosed with pT1b and pT2a melanomas between 2002 and 2023 were included. The primary endpoint was the proportion of SNs with a tumour burden  $>1$  mm.

#### Findings

We identified 36 945 patients with pT1b or pT2a melanoma of who 16 184 underwent SLNB. Of those patients, 5% and 11% with pT1b and pT2a, respectively, had at least one positive SN. Of all patients undergoing SLNB, 1.5% of patients with pT1b and 4.1% of patients with pT2a melanoma had a SN tumour burden  $>1$  mm. This translates to a number needed to treat (NNT) for adjuvant therapy eligibility of 69 and 25 for patients with pT1b or pT2a melanoma, respectively.

#### Conclusion

In this nationwide study we found a low incidence of positive SNs and minimal likelihood of significant clinical outcomes following SLNB. Given these results and the high NNT to be eligible for adjuvant immunotherapy, SLNB may no longer be justified for pT1b. For pT2a patients, SLNB should be considered carefully, balancing limited clinical benefits against potential risks.