

## The analysis of the outcomes and factors related to iliac–obturator involvement in cutaneous melanoma patients after lymph node dissection due to positive sentinel lymph node biopsy or clinically detected inguinal metastases

M. Zdzenicki <sup>a,f</sup>, P. Rutkowski <sup>a\*,f</sup>, Z.I. Nowecki <sup>b</sup>, A.C.J. van Akkooi <sup>c</sup>, W. Michej <sup>d</sup>,  
W. Dziewirski <sup>a</sup>, T. Świtaj <sup>a</sup>, A. Pieńkowski <sup>a</sup>, M. Sałamacha <sup>a</sup>, E. Bylina <sup>a</sup>, A.M.M. Eggermont <sup>e</sup>

<sup>a</sup> Department of Soft Tissue/Bone Sarcoma and Melanoma, Maria Skłodowska-Curie Memorial Cancer Centre and Institute of Oncology, Roentgena 5, 02-781 Warsaw, Poland

<sup>b</sup> Department of Gastrointestinal Tumours, Maria Skłodowska-Curie Memorial Cancer Centre and Institute of Oncology, Warsaw, Poland

<sup>c</sup> Erasmus University Medical Centre – Daniel den Hoed Cancer Centre, Rotterdam, The Netherlands

<sup>d</sup> Department of Pathology, Maria Skłodowska-Curie Memorial Cancer Centre and Institute of Oncology, Warsaw, Poland

<sup>e</sup> Cancer Institute Gustave Roussy, Villejuif/Paris-Sud, France

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### Abstract

**Background:** We assessed clinical–pathological features and outcomes of cutaneous melanoma patients after ilio-inguinal lymph node dissection (LND) in relation to the presence of metastases in iliac–obturator nodes.

**Methods:** We analyzed 390 consecutive patients who underwent ilio-inguinal therapeutic LND [TLND] (237) due to clinical/cytologically detected metastases or after completion LND [CLND] (153) due to positive SLN biopsy (in one cancer centre 1994–2009). Median follow-up time was 60 months.

**Results:** The 5-year overall survival (OS) rate was 49% and median OS – 52 months in the entire group of patients. According to univariate analysis following factors had significant negative influence on OS: presence of metastases to iliac–obturator nodes (5-year OS for positive versus negative: 54.5% and 32%, respectively), macrometastases, higher Breslow thickness, ulceration, higher Clark level, male gender, number of metastatic lymph nodes, extracapsular extension, and, additionally in the CLND group – micrometastases size  $\geq 0.1$  mm according to the Rotterdam criteria and non-subcapsular location of micrometastases. Iliac–obturator involvement was also negative factor for OS in multivariate analysis. The presence of iliac–obturator nodal metastases correlated with the following factors: type of LND–CLND versus TLND (15% versus 27.5%) of iliac–obturator involvement, respectively, higher Breslow thickness, extracapsular extension of nodal metastases, male gender. We have not identified any metastases in iliac–obturator nodes in group of patients with micrometastases size  $\leq 1.0$  mm and primary tumour Breslow thickness  $< 4.0$  mm or no ulcerated primary tumours.

**Conclusions:** Metastases to iliac–obturator nodes have additional negative prognostic value for melanoma patients with inguinal basin involvement. We are able to identify the subgroup of patients after positive SLN biopsy without metastases to iliac–obturator nodes, probably requiring only inguinal LND.

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**Keywords:** Melanoma; Lymph node dissection; Inguinal; Iliac; Sentinel node biopsy; Tumour burden

### Introduction

The radical lymph node dissection of regional lymphatic basin is basic therapeutic modality for AJCC (American

Joint Committee on Cancer) TNM stage III melanoma patients.<sup>1</sup> Controversies still exist about the extent of a dissection in the groin in a case of metastatic melanoma to this region.<sup>2</sup> In some centres metastases of the melanoma, present in an inguinal region (revealed in a sentinel lymph node biopsy [SLNB] procedure or during the clinical examination/(pathologically confirmed)) are an indication for a radical dissection of inguinal, iliac and obturator nodes. In

\* Corresponding author. Tel.: +48 22 6439375; fax: +48 22 6439791.

E-mail address: [mzdzenicki@coi.waw.pl](mailto:mzdzenicki@coi.waw.pl) (P. Rutkowski).

<sup>f</sup> Both authors contributed equally to the study.

other institutions deep (iliac and obturator) dissection, is performed only when metastases in those basins are shown on imaging examinations (CT, MR or PET-scanning) or when the Cloquet node is involved.<sup>2–4</sup>

Additionally, with common use of SLNB procedure, the population of patients with minimal tumour burden in lymph nodes (micrometastases) is increasing. Current analysis of prognostic factors in AJCC TNM stage III melanoma patients included to AJCC database is based on more than 80% of micrometastatic disease detected during SLNB.<sup>5</sup> It seems that in many of those patients more limited operation might be indicated, or even the CLND may be spared in selected cases.<sup>6,7</sup>

The present study demonstrates the outcomes of inguinal, iliac and obturator lymph node dissection in AJCC TNM stage III melanoma patients, treated in a single tertiary cancer centre. The data analysis was performed to identify the prognostic value of iliac–obturator metastases, factors influencing overall survival in those patients and helped to describe the sub-population of patients in whom dissection of iliac and obturator nodes can likely be omitted safely, due to identification of possible factors correlating with metastases to iliac–obturator nodes in relation to tumour burden.

The aim of the study was an assessment of incidence and factors having impact on iliac–obturator nodal metastases in relationship to inguinal metastases tumour burden as well as the outcomes in stage III cutaneous melanoma patients after iliac–inguinal node dissection in correlation to the presence of metastases in iliac–obturator nodes.

## Material and methods

### Patients and procedures

The data of 390 consecutive stage III melanoma patients, who underwent a radical inguinal–iliac–obturator lymph node dissection between May 1994 and May 2009 at the Department of Soft Tissue/Bone Sarcoma and Melanoma at the M. Sklodowska-Curie Memorial Cancer Centre and Institute of Oncology, Warsaw, Poland (CCIO), were analyzed retrospectively.

In 237 patients [60%] the therapeutic LND [TLND] was performed, due to the clinically detected and cytologically confirmed inguinal metastases. Another 153 patients [40%] underwent completion LND [CLND], 3–6 weeks after a positive SLNB procedure. All patients, who qualified for SLNB staging met the following criteria:

- primary cutaneous melanoma  $\geq 0.75/1.0$  mm (this criterion has been changed after changes in AJCC staging system were implemented<sup>8</sup>) or ulcerated primary tumours or Clark level  $\geq IV$  or mitotic rate  $\geq 1/\text{mm}^2$ , after excisional biopsy (all histological diagnoses were confirmed in local Department of Pathology);
- clinically non-palpable regional lymph nodes;

- absence of distant metastases (confirmed routinely by physical examination, chest X-ray, abdominal ultrasound and/or computed tomography imaging) and in-transit metastases.

The detailed technique of SNB and the pathologic examination of SNs have been already presented in our previous publications.<sup>9</sup> One hundred thirty-two cases (86%) of pathological slide of the SNs were re-evaluated for assessment of SN tumour burden according to Rotterdam criteria<sup>6</sup> (and the largest diameter in millimetre was noted) and the micro-anatomic location of metastases according to the Dewar criteria (subcapsular, parenchymal, combined, multifocal or extensive).<sup>10</sup>

Median follow-up time for the entire group of patients was 50 months for survivors (range: 6–120 months). The clinico-pathological stage of the melanoma patients was determined by pathological evaluation of the primary lesion and of the dissected lymph nodes, as well as by physical examination and routine imaging examinations (chest X-ray, ultrasound of the abdominal cavity and computed tomography imaging of the pelvis or other sites, if necessary).

The detailed clinical and pathological characteristics of patient population are shown in Table 1. Radical lymph

Table 1  
Clinical–pathologic features of an analyzed patients population.

		Number of patients	%
Gender	Female	257	66
	Male	133	34
Reason for LND	CLND	153	40
	TLND	237	60
Primary melanoma Breslow thickness [mm]	$\leq 1.0$	16	5
	1.01–2.0	48	15
	2.01–4.0	120	36
	>4.0	148	44
	Data not available	58	
	(27 unknown primary melanomas)		
	Median	4	
Number of metastatic nodes	1	144	37
	2–3	144	37
	>3	102	26
Extracapsular extension of lymph node metastases	No	252	65
	Yes	138	35
Ulceration of melanoma	No	136	40
	Yes	205	60
	Data not available	49	
	(27 unknown primary melanomas)		
SLN metastases size <sup>a</sup>	$\leq 0.1$ mm	6	5
	0.1–1.0 mm	40	30
	>1.0 mm	86	65
SLN metastases microanatomic localisation <sup>a</sup>	Subcapsular	8	6
	Other	124	94

<sup>a</sup> Data available in 132 patients of CLND group.

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