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Diagnostic Services for Melanoma in Italy

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Key Words

Melanoma · Nevi · Diagnostic services · Skin cancer unit · Pigmented skin lesions · Dermoscopy · Digital dermoscopy · Epiluminescence microscopy · Mole mapping

Abstract

Objective: To evaluate organizational structure and diagnostic procedures used by the Italian hospital network for identifying cutaneous melanoma. ***Methods:*** A nationwide survey of a representative sample of centers was conducted. ***Results:*** Diagnosis occurs mainly in ambulatory dermatology clinics (91%). In all high-volume hospitals, clinical and dermoscopic examination is available at first consultation or as an additional service, compared to 89% of low-volume hospitals. Computer-assisted videodermoscopy is available in 75% of hospitals, with a statistically significant difference between high- and low-volume hospitals (86 vs. 62%; $p < 0.001$). First consultation is generally an integrated clinical/dermoscopic evaluation (55% of high-volume centers vs. 47% of low-volume hospitals); digital evaluation is available for monitoring suspicious lesions and high-risk patients in 25% of high-volume centers versus 19% of low-volume centers. ***Conclusions:*** The organizational structure and diagnostic procedures in Italian hospitals are in line with modern diagnostic procedures for early diagnosis of melanoma. Dermatologists have a central role in managing diagnosis of primitive melanoma.

Introduction

Total body examination is the basic screening method for secondary prevention of melanoma. The main clinical signs of melanoma are summarized by the ABCDE rule [1, 2] and the 'ugly duckling' rule [3]. The ugly duckling rule seems to be a useful integration of the ABCDE rule which is based on lesion morphology (A = asymmetry of the lesion; B = borders of the lesion are irregular; C = color: usually melanomas have many varied colors; D = diameter >6 mm; E = evolution over time), although sensitivity is low in early melanomas. Clinical examination includes evaluation of patient-reported lesions and the surrounding skin under magnification and strong lighting. Dermoscopy has been used as an adjunct to clinical examination since the late 1980s [4].

Dermoscopy (also called epiluminescence microscopy, dermatoscopy or reflected light microscopy) is a non-invasive technique that permits evaluation of dark, par-

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Table 1. Diagnostic and therapeutic services provided by Italian hospitals grouped according to yearly melanoma diagnoses into high-volume (>25) and low-volume (≤25) centers

Service	Type of center		
	high-volume (n = 56)	low-volume (n = 64)	all (n = 120)
Clinical diagnosis	100	97	99
Excisional biopsy	96	93	94
Clinical and instrumental diagnosis	100*	89	97
Histology	100	94	88
Radical surgery based on T	94	83	95
Medical therapy	98	92	82
Lymphadenectomy	85	78	72
Radical surgery and SLN procedures	91**	56	53
Participation in multicenter research protocols	63**	44	43
Genetic marker consultation and studies	51	36	

Data are expressed as percentages. SLN = Sentinel lymph node. * $p < 0.001$; ** $p = 0.003$.

tially pigmented or achromic neoformations under strong magnification. It facilitates identification of microscopic and vascular structures as well as pigment distribution, and improves the diagnosis of melanocytic lesions (particularly subtle melanomas) and non-melanocytic lesions (e.g., carcinoma, seborrheic keratosis, dermatofibroma, angioma and angiokeratoma) [4, 5].

With the introduction of digital dermoscopy, diagnostic management and follow-up of high-risk patients has improved [6]. Digital dermoscopy (videodermoscopy) involves evaluation and storage of clinical and dermoscopic images of melanocytic lesions to monitor for geometric, chromatic or structural changes [7]. Short-term application of this method (3–6 months) is used to monitor atypical lesions that may be featureless or nevus-like melanomas, while longer periods (>6 months) are used to map and monitor multiple atypical moles in patients at high risk of melanoma [7, 8]. Integrating management of clinical and dermoscopic diagnosis provides higher diagnostic efficacy compared to either examination alone [9]. Skin cancer prevention can therefore be summarized in the following steps: (1) clinical examination, (2) dermoscopic examination and (3) digital monitoring. The order of these steps may vary.

The aim of this study was to assess the organization of the Italian diagnostic service for melanoma in light of important diagnostic advances in early diagnosis of melanoma and mole mapping, such as digital dermoscopy.

Methods

Briefly, a nationwide survey of clinicians responsible for the diagnosis, therapy or follow-up phases of melanoma care in Italian hospitals was conducted. Italian hospitals with ≥200 beds (n = 285) were subdivided into 145 hospitals with 200–399 beds and 140 hospitals with ≥400 beds and a proportionally stratified random sample (n = 120 centers), stratified by number of beds and geographic distribution, was selected. Two or three clinicians were interviewed at each center, resulting in approximately 250 interviews and a predicted margin of error – 95% confidence level – of 7.7%.

Based on the findings, centers were grouped by number of new melanoma diagnoses per year into low- and high-volume centers, around the median value of 25. Variables were analyzed in the total sample/total Italian hospitals, and comparisons were made between high- and low-volume centers using Pearson's χ^2 test and the zeta test at 95% confidence level. Detailed methods are presented elsewhere in this issue [10].

Results

Diagnostic Network

Nearly all Italian hospitals (99%) perform clinical evaluation of melanoma and pigmented cutaneous lesions (table 1). Diagnostic services are provided mainly in the dermatology departments (91%) (table 2). The analysis shows that all high-volume hospitals provide clinical and instrumental examination at the first or second consultation, whereas the diagnostic level in the low-volume hospitals is lower (100 vs. 89%, $p < 0.001$) (table 1).

Overall, 65% of centers have a specific unit for early diagnosis of melanoma and pigmented lesions, with a prevalence in high-volume centers (78 vs. 52%, $p < 0.001$). The pigmented skin units (i.e., dermatology oncology clinics) are generally integrated into the dermatology service.

In contrast, 22% of high-volume hospitals and 48% of low-volume hospitals ($p < 0.001$) have dedicated dermatology oncology clinics that do not provide dermoscopic evaluation at first consultation. Another relevant finding is the availability of digital videodermoscopy in 75% of centers, overall, with a prevalence in high-volume hospitals (86 vs. 62%, $p < 0.001$).

Diagnostic Steps

Table 3 provides a description of the diagnostic procedure used in Italian hospitals for evaluating pigmented

Table 2. Organization of diagnostic services in Italian hospitals grouped according to yearly melanoma diagnoses into high-volume (>25) and low-volume (≤25) centers

Service	Type of center		
	high-volume (n = 56)	low-volume (n = 64)	all (n = 120)
Clinic for diagnosis of pigmented skin lesions	100	52	65
General dermatology clinic	86	96	91
Dedicated dermatologic oncology clinic			
No dermoscopy available on initial visit	22*	48	30
Dermoscopy available on initial visit	78*	52	66
Cutaneous diagnosis and instrumental imaging service	86*	62	75

Data are expressed as percentages.
* $p < 0.001$.

Table 3. Diagnostic procedures envisioned for patients on their first visit to an Italian hospital, grouped according to yearly melanoma diagnoses into high-volume (>25) and low-volume (≤25) centers

Service	Type of center		
	high-volume (n = 56)	low-volume (n = 62)	all (n = 118)
General visit	20*	34	27
General visit and manual dermoscopy	55	47	51
General visit, manual and digital dermoscopy	25	19	22

Data are expressed as percentages.
* $p < 0.02$.

lesions. The basic instrumental equipment in most hospitals allows skin examinations at first consultation, which are mainly carried out as part of an integrated clinical-dermoscopic evaluation (55% of high-volume hospitals versus 47% of low-volume hospitals). Digital monitoring for melanocytic lesions and management of high-risk patients is available in 25% of high-volume hospitals versus 19% of low-volume hospitals. Few centers provide only clinical evaluation at first consultation, and this is more often the case in low-volume hospitals (34 vs. 20%, $p = 0.02$).

Discussion

The organization and diagnostic procedures used in Italian hospitals are rational and in line with modern diagnostic procedures for early diagnosis of melanoma [1–3, 9–12]. Dermatologists play an essential role in the management of primitive melanoma diagnosis.

There appears to be more interest in dermoscopy and digital applications in Italy, compared to other countries. This is evident from the elevated number of Italian studies published [12], which has accelerated the widespread use of the technique in combination with traditional clinical observation. The overall diagnostic situation is satisfactory, although significant differences exist between low- and high-volume hospitals for a number of structural aspects (clinics for the diagnosis of pigmented lesions using dermoscopy at first consultation, availability of videodermoscopy) and/or management aspects such as scheduled follow-up and distribution of the type of patients. Clinical-instrumental diagnostics are carried out in 94% of centers.

A recent meta-analysis revealed that dermoscopy is superior to naked eye examination for diagnosing melanoma in diagnostic reference centers [12]. However, the diagnostic accuracy of dermoscopy is not 100%, and the final diagnosis must be based on a comparison of dermoscopy findings with anamnesis and clinical findings, including macroscopic morphology according to ABCDE and/or the ugly duckling rule [1–3, 9–13]. In practical terms this means that combination of clinical evaluation and dermoscopy reduces the risk of false-negative diagnoses in melanoma [11, 13] and reduces the possibility of false-positive cases referred to surgical excision, thus limiting the risk of removing pigmented lesions defined as suspicious on clinical examination but diagnosed as benign on histological examination [14]. In addition, combined clinical and dermoscopic examination is only slightly longer than clinical examination alone [15].

In several highly technological countries, dermoscopy is not routinely taught in residency programs [16, 17], but data show an adequate level of training in Italy. In addition to offering combined clinical and dermoscopy evaluations at first consultation, most centers provide also the possibility of adding digital evaluation for monitoring melanocytic lesions and managing high-risk patients.

Recently there have been important advances in methods for the diagnosis of melanoma and management of

high-risk patients. It is hoped that this information will encourage implementation of integrated clinical and instrumental evaluation of pigmented and hypopigmented skin lesions, thereby increasing diagnostic accuracy and the effectiveness of management.

Disclosure Statement

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