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Lack of communication between dermatologists and histopathologists in real-life settings: a survey of the Italian Association of Hospital Dermatologists (ADOI)

Running title: Dermatologist-to-histopathologist communication

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Abstract

Skin cancer incidence is increasing worldwide. Clear communication between dermatologists and histopathologists, along with the possibility of sharing clinical images, is critically important. This survey aims to depict the level of communication between dermatologists and histopathologists in clinical practice in Italy.

A group of histopathologists participating in monthly online meetings were recruited to participate in our survey. We collected information regarding dermatologists' habits in providing or not providing clinical and dermatoscopic images of melanocytic/keratinocytic lesions.

A total of 63 histopathologists agreed to participate. Fewer than 15% of histopathologists receive routine clinical or dermatoscopic images from dermatologists after the surgical excision of a melanocytic lesion, while clinical and dermoscopic images of non-melanoma skin cancers are sent in fewer than 10% of cases.

Our survey revealed that, in Italy, the communication between dermatologists and pathologists is far from being optimal.

Introduction

Skin cancer is a major health problem, and its incidence is increasing worldwide. Melanoma accounts for 1.7% of global cancer diagnoses and is the fifth most common cancer in the United States (US).[1] Despite representing only 1% of cutaneous cancers, melanoma is associated with over 80% of skin cancer deaths.[2]

The incidence of non-melanoma skin cancers (NMSC) is much higher than that of melanoma.[3] Basal cell carcinoma (BCC) is the most frequent human tumor. Cutaneous squamous cell carcinoma (cSCC) is the second most common NMSC after BCC; it accounts for 20% of all cutaneous tumors and, when melanoma is excluded, for about 75% of deaths due to cutaneous cancers.[4]

Surgical excision, followed by histopathological examination, is a critical step in managing skin cancer. Both melanocytic and non-melanocytic skin tumors exhibit a wide range of clinical and pathological variants. While many cases have clear-cut diagnoses, some present challenges and fall into a 'grey zone' of difficult-to-diagnose cases.[5]

Histopathological criteria alone may be insufficient to distinguish, for example, a severely dysplastic nevus from a melanoma in situ. Nevoid and lentiginous melanomas can mimic their benign counterparts in histopathology (Figure 1, 2). Clinical data must be paired with pathological patterns to reach a final diagnosis of Spitz lesions. Consequently, various categories have been created, such as SAMPUS (superficial atypical melanocytic proliferation of uncertain significance),

and MELTUMP (melanocytic tumor of uncertain malignant potential), which serve as a framework used by pathologists to define lesions when uncertainty predominates.[6] There is evidence that the integration of written clinical data with clinical and dermoscopic images helps pathologists to increase their level of confidence, providing more precise diagnoses that allow better management of patients.[7,8]

The above-mentioned issues were raised during the monthly online meetings organized since September 2021 on the web platform of the Italian Association of Hospital Dermatologists (ADOI: https://www.adoi.it/), with collegial discussion of difficult cases among experienced Italian dermopathologists.[9,10] The proposal was to conduct a survey on the current situation of communication between dermatologists and histopathologists in clinical practice at different workplaces in Italy.

Materials and Methods

This survey was conducted according to the snowball sampling procedure,[11] on a group of 81 experienced Italian histopathologists participating in the monthly online teledermatopathologic meetings on difficult melanocytic lesions organized by ADOI. In brief, a questionnaire was sent by email to all clinicians, describing the purpose of the study. Those who agreed to participate signed a written informed consent before starting to answer the survey. Data were collected from January 17th, 2023 to February 2nd, 2023. The study was approved by the IDI-IRCCS Institutional Ethical Committee (Approval #608-1) and conducted according to the Helsinki Declaration standards.

In the first part of the survey, we collected information about gender, age, number of years of practice in histopathological diagnostics after specialization (<10, 10-29, ≥30), geographical area in which they were currently employed, type of workplace (*e.g.*, university clinic, research hospital, local health department, private practice). The second part of the survey consisted of five specific questions regarding dermatologists' habits in providing, not providing, or providing only upon request: i) clinical images; ii) dermatoscopic images; iii) the dermatoscopic algorithm of the removed melanocytic/keratinocytic lesions. The third part of the survey consisted of the question: "In the event of a melanocytic/keratinocytic lesion that is suspect or possibly misdiagnosed, do you have the opportunity to discuss the case with the dermatologist?".

All descriptive statistical analyses were performed using the Statistical Package for the Social Sciences for Windows, release 28 (IBM Corp., Armonk, NY, USA). Data were described as numbers, percentages, and frequency rates. Percentages were compared using the Chi-square test and the Chi-square test for trend.

Results

A total of 63 histopathologists agreed to participate, completed the informed consent form, and answered the survey questions. Tables 1 and 2 describe the study population and survey results. The study included 22 men (34.9%) and 41 women (65.1%). Of them, 38.1% had finished histopathology training less than 10 years before the survey, 33.3% between 10 and 29 years, and 28.6% more than 30 years before the survey. More than 60% of the participants worked in Northern Italy, 22.2% in Central Italy, and 17.5% in Southern Italy.

Concerning the workplace, 31.7% of participants worked in a hub, 23.8% in spokes, 22.2.% in university clinics, 11.1% in Scientific Institute for Research, Hospitalization, and Healthcare (IRCCS) Institutes, and 11.2% in other workplaces such as private practices, private clinics, and laboratories.

Clinical photographs of melanocytic lesions were available for histopathologists in 7.9% of cases and fewer than 15% of cases for both University Clinics and IRCCS (Table 1). Clinical images were available on request in 27.0% of cases. The overall availability of dermoscopy images was 4.8% (and 27.0% upon request). The category-specific percentages of information availability are summarized in Table 1.

In the group of participants with 10-29 years of practice, dermatoscopic algorithms were available in 42.9% of cases ($p<0.05$); among participants with <10 years of practice, dermatoscopic algorithms were provided in 16.7% of cases ($p<0.05$); in the group of pathologists with >30 years of experience, the algorithm was present in 11.1% of cases ($p<0.05$). Concerning the workplace, the dermatoscopic algorithm was available for 71.4% of participants working in IRCCS ($p<0.05$), for 28.6% of histopathologists working in university clinics ($p<0.05$), 26.7% of those working in spokes ($p<0.05$), and for 10% of pathologists in hubs ($p<0.05$).

All participants working in “other” workplaces (private practice, private clinics, etc.) were able to discuss with clinicians about diagnostic doubts via email, chats, or text messages ($p<0.05$). For histopathologists working in hubs, it was possible to discuss with clinicians diagnostics doubts both face to face (55%) and via chat or email (40%) ($p<0.05$). For participants working in spokes, the possibility of communicating with clinicians was present in 60% of cases via telematics and in 20% of cases in person ($p<0.05$); for those working in university clinics, it was 50% via mail and chats and 50% face to face ($p<0.05$); for participants belonging to IRCSS, it was 71.4% face to face and 28.6% via email, chats or texts ($p<0.05$).

Concerning the information availability on BCC and SCC, both clinical and dermatoscopic photographs were provided spontaneously to pathologists in fewer than 10% of cases and were available on request in less than 30% in all categories (Table 2).

Discussion

Our study aimed to depict the current situation of dermatologist-to-histopathologist communication concerning cutaneous tumors in real life by carrying out a survey of histopathologists.

Physician-to-physician communication mainly consists of sharing clinical and dermoscopic images of the excised skin sample, but it should also include complete information about the medical history of the lesion and the topography, which could help to reach the correct histological diagnosis. For this reason, histopathologists receive cutaneous biopsy specimens accompanied by requisition forms, which should help to achieve the correct diagnosis. If necessary, and especially in doubtful clinical cases, communication between the dermatologist and the histopathologist should be direct, either in-person or telematically.[12]

Requisition forms may also report one or more dermatoscopic algorithms, such as the three-point checklist or the AC rule, which have been proposed to identify suspicious lesions for melanoma.

We observed that, in Italy, fewer than 15% of histopathologists receive routine clinical or dermatoscopic images from dermatologists after the surgical excision of a melanocytic lesion, while clinical and dermoscopic images of BCCs and SCCs are sent in fewer than 10% of cases (Tables 1,2). Indeed, in most cases, no clinical or dermatoscopic images are sent to histopathologists along with the skin sample.

Dermoscopy images are available on request in about 30% of cases on average, considering all settings together, ranging from 14.3% to 42.9% (Table 1). In sum, in Italy, on average, less than 70% of pathologists have the possibility to improve their level of confidence in cases of doubtful and difficult melanocytic lesions, therefore rendering uncertain diagnoses.

These data are alarming and clearly show that dermatologists' awareness of the importance of clinic-dermoscopic-pathological correlation in dermatopathology is extremely low.

Possible explanations may be different: a) lack of attitude to acquire routine images of excised lesions, which is not acceptable in the era of high-resolution digital dermoscopy and other common devices; b) privacy concerns: patient consent should also include the possibility of acquiring images and to send them to pathologists; c) time-consuming: certainly, in clinical practice, considering the busy clinician’s everyday routine, it might be difficult to acquire clinical and dermoscopic images before surgery. Nonetheless, the ability to provide a complete requisition form, including dermatoscopic algorithms and proper images, is a matter of workflow organization, and the estimated time to send images via email or web applications averages a few minutes.[13]; d)

workflow organization: standardized workflows are needed in order to guarantee patient consent, acquisition of images, and shipping; e) education: scientific societies should promote meetings and workshops focusing on the relevance of the clinic-dermoscopic-pathologic correlation in dermatology.

In addition to the important improvement in pathologists' diagnostic confidence previously discussed,[7,5] another key point is that the examination of clinical and dermatoscopic photographs is crucial, especially in melanocytic lesions for which a correct macroscopic cutting of the cutaneous sample is needed to examine the most suspicious part of the biopsy.[14]

The clinicopathologic correlation is not limited to skin cancers but is of uppermost importance in all dermatology fields, particularly for inflammatory dermatoses, for which the clinical image allows a better interpretation of the histopathologic findings .[15,16]

As for the possibility of discussing diagnostic doubts, in the settings grouped under the label of "other" (*i.e*., private clinics, private laboratories, etc.), 100% of participants reported the possibility of communicating with dermatologists via text messages, chats, or emails, while no one of this group communicated face-to-face. This is in line with the consideration that physicians consulting in private practices usually, in Italy, have their main appointments in other, different structures and consequently need to use electronic devices to communicate with other clinicians. On the contrary, face-to-face communication is easier in larger and multidisciplinary institutions such as university clinics or research hospitals. In IRCSS institutes, face-to-face collaboration is reported in 71.4% of cases.

The dermatoscopic algorithm is reported more often by physicians of IRCCS institutes (71.4%) than by those working in structures grouped under "other"(0%).

To date, only a few works have focused on communication between clinicians and histopathologists. A 2010 review stated that clinical information regarding pigmented lesions is often not provided on requisition forms completed by dermatologists,[17] and our results align with this finding.

In a 2015 mixed-method study based on a survey completed by 598 histopathologists, dermatopathologists expressed significant dissatisfaction with the quality of clinical information in the requisition form and the time spent obtaining essential information to reach a reliable diagnosis.[18]

In conclusion, in Italy, the communication and collaboration between dermatologists and pathologists is still extremely low, and, in our opinion, this is not acceptable in the era of major informatics development, technical facilities, and mobile connections. Our survey confirms that integrating the requisition form, especially with clinical and dermatoscopic photographs of the

cutaneous tumor, is still worryingly lacking and highlights the unmet need to improve efficient communication and collaboration between dermatologists and histopathologists in clinical practice. Scientific societies should promote meetings and congress sessions to increase the awareness of dermatologists on the relevance of clinic-dermoscopic-pathologic correlation, and uppermost must also produce guidelines or scientific recommendations to enforce correct procedures. Furthermore, physicians, particularly dermatology residents, should receive early education concerning the importance of this field, for example, by attending the Laboratory of Pathology during the residency. This could be useful to better understand the key role of the clinical-pathologic correlation.

The worrying data of our survey and all these further considerations should be evaluated with the aim of improving physician-to-physician communication, achieving correct diagnoses, and, therefore, better care for our patients.

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Figure 1. A, C) Hematoxylin and eosin stain 10x; **B, D)** Hematoxylin and eosin stain 20x. Asymmetric intraepidermal melanocytic proliferation composed of an irregular nest of cohesive melanocytes of medium size; the differential diagnosis is between a dysplastic nevus and a nested (nevoid) melanoma. A definitive and certain diagnosis on histopathology alone is not possible, and clinical-dermoscopic correlation is needed.

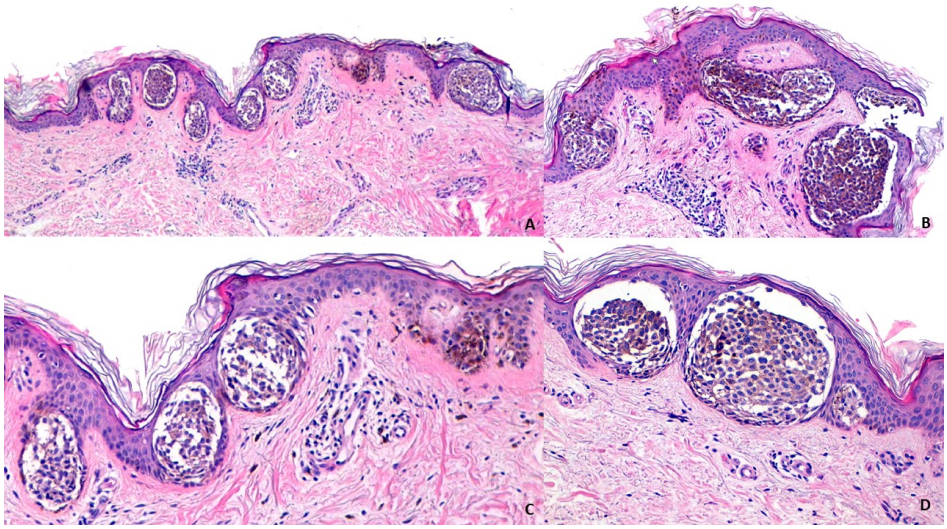

Figure 2. Dermoscopic image of the same patient showed in Figure 1. The lesion is located on the left lower leg of a 73-year-old man with a previous history of melanoma in situ on the back; the lesion was noticed during a yearly digital dermoscopyc follow-up and was not present at the prior visit. Dermoscopy shows global asymmetry, a globular pattern with irregular globules, pseudopods, irregular hyperpigmented areas, more than 3 colors. Upon dermoscopy-pathologic correlation, a diagnosis of nested melanoma can be made with a high level of confidence.

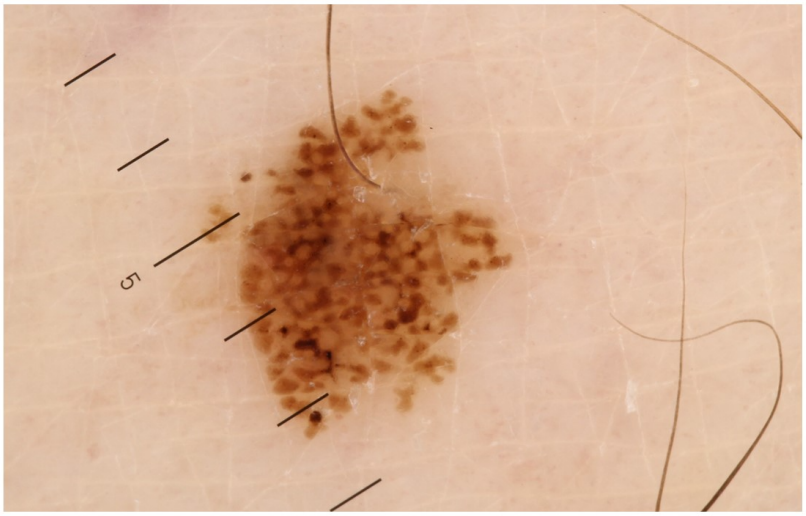

Table 1. Description of the sample and relationship between sociodemographic features and available clinical information on the removed melanocytic lesion.

Histopathologists			% melanocytic lesion's clinical information availability							
			clinical photograph		dermatoscopic image		dermatoscopic algorithm[a]	possibility to discuss about diagnostic doubt (with clinicians)[b]	
Variables		%	yes	on request	yes	on request		via text, email, chat	face to face
overall N=63		100	7.9	27.0	4.8	27.0	23.8	52.4	41.3
Sex	M	34.9	13.6	18.2	2.4	29.3	26.8	50.0	50.0
	F	65.1	4.9	31.7	9.1	22.7	18.2	53.7	36.6
years of practice after specialization	<10 years	38.1	12.5	29.2	8.3	25.0	**16.7**	45.8	45.8
	10-29 years	33.3	9.5	23.8	4.8	38.1	**42.9**	61.9	33.3
	30+ years	28.6	0.0	27.8	0.0	16.7	**11.1**	50.0	44.4
Area	northern	60.3	7.9	26.3	5.3	26.3	18.4	50.0	44.7
	central	22.2	7.1	28.6	7.1	7.1	28.6	57.1	35.7

	southern	17.5			9.1	27.3		0.0	54.5	36.4	54.5	36.4
Workplace	other*	11.2			0.0	42.9		0.0	14.3	**0.0**	**100.0**	**0.0**
	hub	31.7			5.0	20.0		5.0	20.0	**10.0**	**40.0**	**55.0**
	spoke	23.8			6.7	20.0		0.0	33.3	**26.7**	**60.0**	**20.0**
	university clinic	22.2			14.3	28.6		7.1	42.9	**28.6**	**50.0**	**50.0**
	Dermatological Research Hospital	11.1			14.3	42.9		14.3	14.3	**71.4**	**28.6**	**71.4**

*other = private practice, private clinic, private analysis laboratory;

[a]dermatoscopic algorithm availability x years of practice after specialization: $\chi 2=6.47$; df=2, $p<0.05$; dermatoscopic algorithm availability x workplace= $\chi 2=13.28$ df=4, $p<0.05$;

[b] possibility to discuss about diagnostic doubt (with clinicians) x workplace: $\chi 2=18.04$; df=8, $p<0.05$.

Table 2. Description of the sample and relationship between sociodemographic features and available clinical information on the removed keratinocyte cancer.

Histopathologists			% keratinocytes (BCC and SCC*[1]) clinical information availability			
			clinical photograph[a]		dermatoscopic image[b]	
Variables		%	yes	on request	yes	on request
Overall *N=63*		100	3.2	22.2	3.2	17.5
sex	m	34.9	9.1	13.6	9.1	13.6
	f	65.1	0.0	26.8	0.0	19.5
years of practice after specialization	<10 years	38.1	4.2	29.2	4.2	20.8
	10-29 years	33.3	4.8	19.0	4.8	19.0
	30+ years	26.6	0.0	16.7	0.0	11.1
Area	northern	60.3	5.3	13.2	5.3	10.5
	central	22.2	0.0	35.7	0.0	28.6
	southern	17.5	0.0	36.4	0.0	27.3
workplace	other*	11.1	0.0	28.6	0.0	14.3
	hub	31.7	5.0	20.0	5.0	10.0
	spoke	23.8	0.0	20.0	0.0	20.0
	university clinic	22.2	7.1	24.4	7.1	24.4
	IRCCS	11.1	0.0	28.6	0.0	28.6

*other = private practice, private clinic, private analysis laboratory;

*[1]BCC and SCC = Basal Cell Carcinoma and Squamous Cell Carcinoma.