

# Incidental Malignant Melanoma: Clinical And Pathological Characteristics

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## Citation

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## Abstract

**Background.** The incidence of cutaneous malignant melanoma (CMM) is rising worldwide and so is its morbidity and mortality. We define the term incidental malignant melanoma (IMM) to describe a lesion referred to surgical treatment with clinical diagnosis other than melanoma or dysplastic nevus. **Objectives.** The goal of this study is to assess incidence and characteristics of incidental melanomas, to explore the reasons for such a diagnosis failure and possible ways of preventing it. **Methods.** This is a retrospective study of 173 skin lesions diagnosed as CMM in 1996-2004. 28 lesions were IMM (16.2%). **Results.** IMMs were strongly associated with high Breslow and Clark level and community clinic versus hospital setting as the primary diagnosing site. **Conclusions.** We found a high percent of IMM in our patient population. This group of high-risk patients is prone to delayed definitive treatment and possible worse prognosis. In view of acute increase in CMM incidence a higher suspicion attitude of not only pigmented skin lesions should be implemented especially in community services.

## INTRODUCTION

The incidence of cutaneous malignant melanoma (CMM) is rising worldwide and so is the morbidity and mortality. CMM constitutes approximately 11% of all skin cancers [1] but it is associated with a significantly higher mortality than non-melanoma skin cancer [2, 3].

Early detection of this tumor is crucial for proper and opportune treatment of patients. An early, timely treatment of CMM reduces morbidity and mortality significantly.

There are two main reasons for delays in treatment of CMM:

**Delayed diagnosis:** Lag time between appearance of new or changing lesion and first observation by physician (patient delay)

**Delayed treatment:** Timing of final excision of the lesion after the doctor's initial diagnosis (physician delay) [4].

Both factors should be dealt with especially in view of long waiting time at public health services in which defined clinical pre-operative diagnosis dictates surgery schedule.

We define the term "Incidental Malignant Melanoma" (IMM) to describe the case of initially misdiagnosed unsuspected CMM lesion that was further diagnosed histo-

pathologically as melanoma.

The goal of this study is to assess incidence and characteristics of incidental melanomas, to explore the reasons for such a diagnostic failure and possible ways of preventing it.

## PATIENTS AND METHODS

This is a retrospective study of 173 histologically diagnosed CMM removed from 168 consecutive patients diagnosed as CMM between the years 1996-2004. All CMM were excised by consultant and residents plastic surgeons in the Department of Plastic Reconstructive Surgery at Soroka University Medical Center and Community Clinics in Beer Sheva and Negev Region, Israel.

These cases were divided into two main groups:

1. Skin lesions clinically suspicious for CMM (Suspicious malignant melanoma – SMM), including dysplastic nevi;
2. Incidental Malignant Melanomas (IMM), misdiagnosed cases with improper clinical diagnosis of benign lesion, BCC or SCC.

The histological reports were reviewed for parameters associated with the tumor diameter, its subtype, Clark and

Breslow thickness and operating setting (community clinics vs. hospital).

Statistical difference for parametric variables was assessed using the Student t-test and for non-parametric variables using chi-squared test.

## RESULTS

168 consecutive patients underwent excision of 173 CMMs.

Twenty-eight lesions out of 173 were IMM (16.2%). The mean age of patients with IMM was  $63 \pm 14.8$  years and for SMM  $59.6 \pm 16.8$ . In IMM group eleven were males (39.3%) and 17 females (60.7%). Among 140 patients with SMM 71 (50.7%) were males and 69 (49.3%) – females. There was no statistically significant difference between these two groups.

120 out of 173 (70%) of CMMs were excised in the hospital and 53 out of 173 (30%) in community clinics. IMM were revealed in 15 out of 120 lesions removed in the hospital (12.5%) and 13 out of 53 (24.5%) in community clinics ( $p=0.042$ ).

The IMM group was divided into 3 subgroups according to referral clinical diagnosis: 1. Benign lesions- 15 (intradermal nevi-3, solar keratosis-5, pyogenic granuloma-2, solar lentigo -2, fungal infection-1, hemangioma-1 and non-defined-1),

2. Basal cell carcinoma (BCC) -6

3. Squamous cell carcinoma (SCC) - 7 (table 1).

### Figure 1

Table 1. Operating settings

| Patients group | Referral diagnosis | hospital | outpatient | total |
|----------------|--------------------|----------|------------|-------|
| IMM            | Benign lesions     | 4        | 11*        | 15    |
|                | BCC                | 6        | 0          | 6     |
|                | SCC                | 5        | 2          | 7     |
|                | Total              | 15       | 13**       | 28    |
| SMM            |                    | 105      | 40         | 145   |
| TOTAL          |                    | 120      | 53         | 173   |

\* -  $p=0.001$

\*\* - $p=0.042$

When comparing benign lesions only (excluding BCCs and SCCs): 4 out of 120 tumors excised in the hospital (3.3%) and 11 out of 53 removed in community clinics (20.8%) were IMM respectively ( $p=0.001$ ) (Table 3). All CMMs were measured for tumor thickness (Breslow) and anatomic level of invasion (Clark) (table 2).

### Figure 2

Table 2. Tumor depth

| Tumor depth | IMM                 | SMM                |
|-------------|---------------------|--------------------|
| Breslow     | $2.90 \pm 2.88$ mm* | $1.34 \pm 1.62$ mm |
| Clark       | $3.63 \pm 1.01$ **  | $2.86 \pm 1.35$    |

\* -  $p=0.01$

\*\* -  $p=0.001$

Mean tumor depth was  $2.90 \pm 2.88$  mm for IMM and  $1.34 \pm 1.62$  mm for SMMs ( $p=0.01$ ). Clark level was  $3.63 \pm 1.01$  for IMM and  $2.86 \pm 1.35$  for SMM ( $p=0.001$ ).

These results indicate that patients with IMM had more advanced tumors on their referral to surgical treatment.

When extracting lesions diagnosed as SCCs from IMM group the differences for tumor depth and level of invasion were not statistically significant anymore.

Tumors were predominantly located on torso, upper and lower limbs (table 3).

### Figure 3

Table 3. Tumor location

| Location      | IMM       | SMM        | Total      |
|---------------|-----------|------------|------------|
| Scalp         | 1 (3.6%)  | 2 (1.4%)   | 3 (1.7%)   |
| Forehead      | 1 (3.6%)  |            | 1 (0.6%)   |
| Temple        | 1 (3.6%)  | 2 (1.4%)   | 3 (1.7%)   |
| Periorbital   |           | 2 (1.4%)   | 2 (1.2%)   |
| Periauricular |           | 1 (0.7%)   | 1 (0.6%)   |
| Ear           | 1 (3.6%)  | 4 (2.8%)   | 5 (2.9%)   |
| Cheek         | 2 (7.1%)  | 11 (7.6%)  | 13 (7.5%)  |
| Nose          |           | 2 (1.4%)   | 2 (1.2%)   |
| Upper limb    | 6 (21.3%) | 21 (14.5%) | 27 (15.6%) |
| Chest         |           | 17 (11.7%) | 17 (9.8%)  |
| Back          | 8 (28.6%) | 51 (35.1%) | 59 (34.1%) |
| Lower limb    | 8 (28.6%) | 31 (21.3%) | 39 (22.5%) |
| Undefined     |           | 1 (0.7%)   | 1 (0.6%)   |
| Total         | 28 (100%) | 145 (100%) | 173 (100%) |

## DISCUSSION

It has been well established that early detection and treatment of CMM improves significantly patient's survival and morbidity [5].

In this study we evaluated clinical and microscopic characteristics of malignant melanomas excised by residents and consultants plastic surgeons in the setting of hospital plastic surgery department and community clinics. The term "Incidental Malignant Melanoma" was chosen by us to describe the CMMs clinically misdiagnosed as benign lesion, BCC or SCC. This term does not include irregular pigmented lesions such as dysplastic nevi. We view dysplastic nevi as potentially suspicious for CMM and prioritize its excision. Overall incidental melanomas were found in 16.2 % of the cases. Our results are in the range for similar set up of plastic surgery clinics (19%) and pigmented

lesion clinics (10%) in UK. Such a lower incidence 10% has been explained by increased diagnostic accuracy of pigmented lesion clinics and decreased proportion of diagnostically more difficult lesions [11]. However in our opinion this percentage is still surprisingly and unexpectedly high. In order to improve our care of such cases, we wanted to reassess our clinical *modus operandi*: Accuracy in diagnosis of CMM, its clinical and microscopic features and its treatment.

Measurement of tumor thickness and level of invasion showed more advanced tumors in IMM group compared with CMM. This was statistically significant for Breslow and Clark staging. These specific IMM characteristics can influence patient's prognosis and eventually survival. In our series the major contributor for diagnosis of advanced CMM were lesions suspected to be SCC. Such lesions are anyhow in high priority for excision and therefore the "physician lag time" in these cases should not be significant.

Misdiagnosis of malignant melanoma may result in delayed treatment and death of the patient [7] and constitutes a major cause of malpractice claims, 70% of them were for false-negative diagnoses. Melanoma claims were second only to claims involving breast biopsy [8].

Monk BE et al reported 6 cases of incidentally diagnosed (in routine skin examination) CMM in one year [6]. They recommend that a thorough skin examination should be included in every physical examination [6, 9].

The percent of IMM excised in community based ambulatory setting, was almost twice as high (24.5%) compared to hospital setting (12.5%). This was statistically significant ( $p=0.042$ ). As we pointed previously comparison of operating settings (hospital vs. community clinics) for benign lesions group only revealed much higher difference 3.3% vs. 20.8%.

This fact is particularly important in view of long waiting list (and time) for skin lesion's (especially for benign ones) excision in public hospital.

This fact raises clinical and ethical dilemma, regarding the design and structure of plastic surgery services, as

misdiagnosis of CMMs may be especially associated with community ambulatory setting. In our previous publication [10] regarding clinical and microscopic histological characteristics of BCC we found that same ambulatory facilities as the predominant setting among the patients with incompletely excised tumors. In both studies the same surgeons served in both, hospital and community facilities.

Another interesting point is a policy implementing by several medical insurance companies not to cover removal of some benign skin lesions as intradermal nevi, (IDN) having only aesthetical significance. According to our results we found 3 IMM with clinical diagnosis IDN.

**Conclusions:** We found a surprisingly high percent of incidental Malignant Melanomas in our patient population. This group of high-risk patients is prone to delayed definitive treatment and possibly to worse prognosis.

In view of acute increase in CMM incidence a higher suspicion attitude of not only pigmented skin lesions should be implemented especially in community services.

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