

## CASE REPORT

# Intracorneal Hemorrhage associated with Junctional Melanocytic Nevus: Case report and brief revision with special reference to Intracorneal Hemorrhage, clinical features and dermoscopy

Enrique Úraga,\* Juan Carlos Garcés,\*\* Verónica Úraga,\*\*\* Andrea Lubkov\*\*\*\*

\* Dermatologist and Director at Dermatology Center "Dr. Úraga"

\*\* Dermatopathologist Dermatologist at Dermatology Center "Dr. Úraga"

\*\*\*\* Dermatologist and Head of the Digital Body Mapping and Dermoscopy Department at Dermatology Center "Dr. Úraga".

Correspondence: drenriqueuragap@hotmail.com

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## ABSTRACT

Intracorneal hemorrhage (IH) is a condition reported under multiple meanings, all referring to an asymptomatic skin lesion, generally related to previous trauma, which is preferentially located in acral areas. Histologically, the presence of blood within the stratum corneum is characteristic.

The case of a patient who consults for presenting two lesions with nevus appearance located on the sole of the right foot is reported; the first one of long evolution and the second one, and main motivation for the consultation, of a month-evolution. The clinical and dermoscopic examination of the two lesions is performed and they are referred for histopathological study.

## INTRODUCTION

This process was firstly reported in 1961 by J. Crissey and J. Peachey by the name of calcaneal petechiae. The authors state that, prior to the publication of the article, they observed 16 cases for two years. The aforementioned lesions manifested as highly characteristic bilateral and symmetrical eruptions located on the heels of basketball players and attributed to intense sports activities. Such lesion's relevance lies on its differentiation from malignant melanoma.<sup>1</sup> However, not every case arises from sports activities. There are calcaneal petechiae case reports without any mention of this type of practice.<sup>2</sup>

## SYNONYM

Medical literature has exposed more than 18 names that describe lesions manifesting blood within the stratum corneum. For example, the intracorneal hemorrhage, calcaneal petechiae, plantar pseudochromhidrosis, black heel and talon noir, basketball player heel, tennis player heel, tennis player toe, subcorneal hematoma, hemorrhagic hyperkeratosis, posttraumatic punctate hemorrhage of the skin, purpura traumatica pedis, disseminated subcorneal hematoma, pigmented palmar petechiae, black palmar macule, playstation thumb, sharp intraepidermal hemorrhage, disseminated punctate intraepidermal hemorrhage, black palm.

The most common name is black heel, as it corresponds to the most frequent location.<sup>3-10</sup>

## CLINICAL CASE

A 35-year-old female patient presents with two small lesions located on the right foot's sole (picture no. 1). The first lesion, which she manifests since childhood, is located on the anterior third of the sole (red circle). The second one, and the main focus of the consultation, is located on the inferior third of the sole (yellow circle). Moreover, it is a month-old injury causing a slight sensation of pain. The patient does not report any previous trauma in her medical history. Furthermore, she does not practice any sports.

She did not take a scraping test to rule out IH, but rather solicited a histopathological study of both lesions.



Picture No. 1 Two plantar lesions are appreciated. The first one, encircled in red, corresponds to the injury that is present since childhood. The second one, encircled in yellow, represents the month-old lesion.

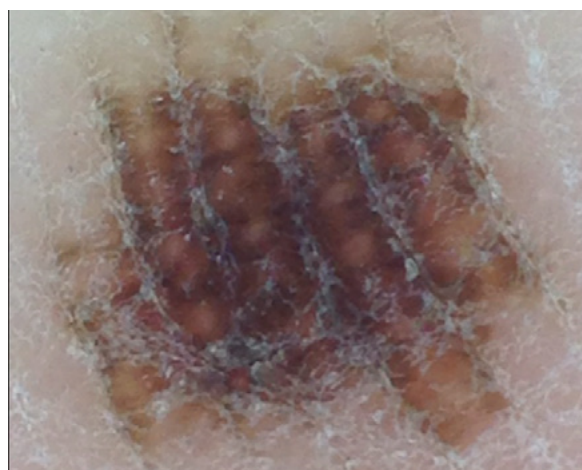
The lesion located on the anterior third of the foot manifests irregular margins, a smooth surface, and dark brown pigmentation; it is also asymptomatic. The patient states the lesion has been present since she remembers. However, she cannot recall if it is a birth injury. It measures 0.8 x 0.5 cm in diameter.

Dermoscopy (picture no. 2) reveals pigmented, irregular lesion showing parallel furrow pattern and infrequent double line disposition. This dermoscopic image is highly characteristic of acral melanocytic nevi.

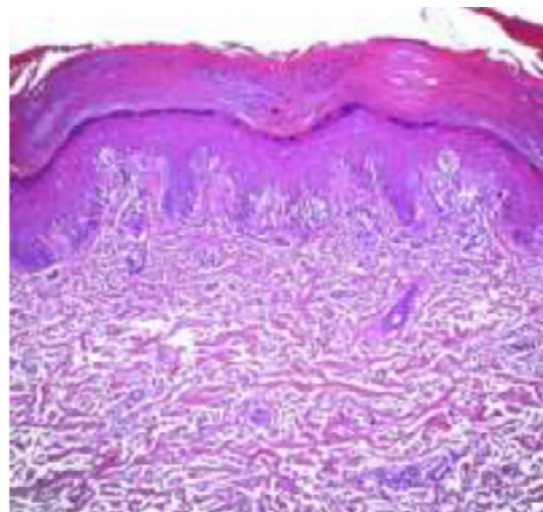
Histopathology (picture no. 3) exposes: Acral skin with melanocytic proliferation, constituted by scarce rounded and regular nests located at the dermoepidermal junction. Melanocytes exhibit large, slightly eosinophilic and finely pigmented cytoplasm. Dermis shows numerous melanophages. No particular changes suggest malignancy.

### Diagnosis: Junctional melanocytic nevus

The second lesion, located on the inferior third of the sole presents with regular, dark and smooth margins, measuring 0.6 x 0.4 cm in diameter. The patient pointed out the lesion is accompanied by mild pain or sensitivity.



Picture no. 2 Melanocytic lesion showing parallel furrow pattern and double line disposition.

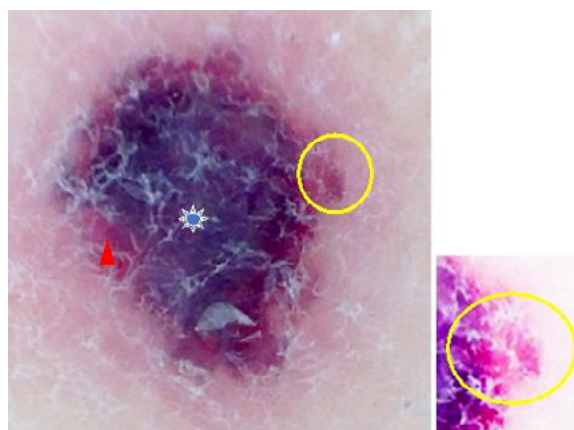


Picture no. 3 Histopathology reveals melanocytic proliferation disposed in nests at the dermoepidermal junction.

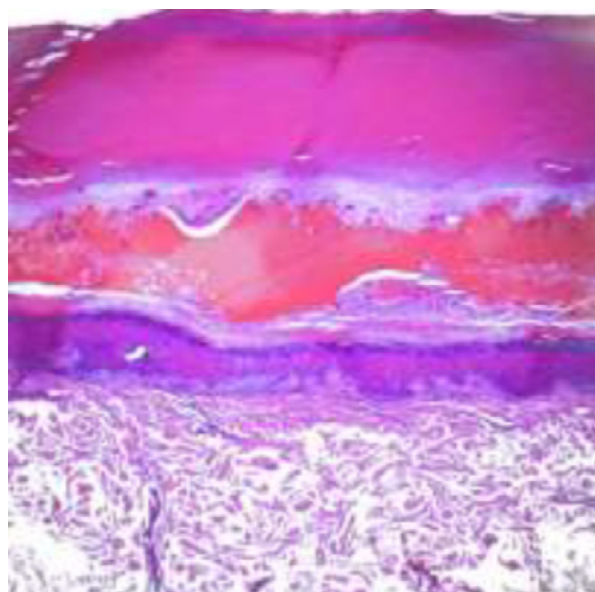
Dermoscopy (picture no. 4) shows purplish-red central portion and red peripheral area. The lesion is usually homogeneous, without parallel furrow patterns, which are common on acral melanocytic lesions. Several small globules are observed within the lesional peripheral area.

Histopathology (picture no.5) reveals acral skin with intracorneal hemorrhage. No melanocytic proliferation is observed.

Diagnosis: Intracorneal hemorrhage



Picture No. 4: Dermoscopy exposes a purplish-red homogeneous area (white star), and a dark red area (red triangle). The image on the right shows peripheral globules; it corresponds to an amplified portion of the yellow circle.



Picture No. 5 Histopathology evidences the presence of highly marked intracorneal hemorrhage.

## DISCUSSION

Although the patient presented with two lesions, the first one, junctional melanocytic nevus, did not raise any concerns, as no changes appeared since childhood. Junctional melanocytic nevus displays both clinical and fairly classic dermoscopic features, along with histopathological confirmation. Consequently, it is reported in a superficial manner. Nonetheless, it does provoke interest as it is located on the same foot as the second lesion and presents some infrequent correlation with intracorneal hemorrhage (the main focus of the article's next section).

## ETIOLOGY OF INTRACORNEAL HEMORRHAGE

IH corresponds to the presence of blood inside the stratum corneum due to localized trauma or sports-related blood vessel ruptures in the papillary dermis, which causes immediate blood accumulation in the epidermis. The blood, trapped in the stratum corneum, is walled off from the phagocytic cells which would usually degrade it. As a result, there is a delayed transit through the epidermis.<sup>11</sup> There are case reports of patients who have taken anticoagulant drugs before manifesting these lesions.<sup>12</sup> Terminology, such as subcorneal hematoma, may represent lesional evolutive stages. For example, this lesion might have initiated in the dermis to ascend to the corneal space. This type of injury is mainly associated with high-impact sports which involve frequent and quick starts and stops, such as basketball, tennis, lacrosse or soccer.<sup>13-8</sup> Adolescents and young adults are most commonly affected due to their frequent participation in sports.

## LOCATION

The most common areas affected are the soles of the feet due to their close relation to precedent trauma. This lesion manifests less commonly on the palms of the hands. Furthermore, heels are closely linked to sports activities; therefore, they frequently manifest lesions known as black heel or calcaneal petechiae,<sup>10</sup> which may be unilateral, in the case of focal traumatism, or bilateral, in the case of the black heel (as in the reports by Crissey).<sup>14</sup> Generally, this condition corresponds to one or two lesions. Nevertheless, there are case reports of multiple lesions.<sup>7</sup>

## CLINICAL PICTURE

Well-delimited rounded and irregular macules are observed. Occasionally, they are linear or punctiform. In addition, they may be nodular, vary in color (bluish black or purplish brown) and be located at the aforementioned areas. They are usually preceded by a medical history which consists of previous trauma that is mostly experienced by young adults with a tendency to practice high-impact sports.<sup>11,10</sup>

## DIAGNOSIS

1. **Clinical:** based on lesional features, location and medical history. However, if uncertain about the presence of melanocytic neoplasms, one must perform a definitive dermoscopic exam or biopsy.
2. **Histopathological:** It evidences the presence of hemorrhage within the stratum corneum.
3. **Scraping test:** This test, performed through the scraping off of the lesional stratum corneum with a scalpel or needle;<sup>15</sup> is considered positive when there is complete or partial removal of the pigmentation.
4. **Dermoscopic:** Dermoscopy is a useful, non-invasive technique which currently allows physicians to diagnose plenty of skin diseases. Nonetheless, there are only a couple of studies that focus on IH dermoscopic features.

Consecutively, the dermoscopic features of both melanocytic lesions and intracorneal hemorrhage are exposed:

## DERMOSCOPY OF NEVIC LESION

The most common dermoscopic findings of acral melanocytic lesions were reported by Emiroglu et al.<sup>16</sup> A study involving the participation of 210 patients with acral nevi revealed the following percentages:

- Parallel furrow pattern: 41.4%
- Globular pattern: 11.4%
- Fibrillar pattern: 10.5%
- Combined pattern: 9.1%
- Lattice-like pattern: 7.1%
- Homogeneous pattern: 5.7%
- Atypical pattern: 3.8%
- Parallel ridge pattern: 12.9%

- Reticular pattern: 1%
- Dotted ridge pattern: 0.5%

Likewise, the parallel furrow pattern has 4 variants:

- Single line: 58.6%
- Single dotted line: 16.1%
- Double line: 8%
- Double dotted line: 17.2%

A highly extensive study about dermoscopic features of acral melanocytic nevi was done by Osdemir et al (17), who examined 2625 patients with the condition. It was concluded that there was a predominance of:

- Parallel furrow pattern: 58.5%
- Fibrillar pattern: 12.2%
- Lattice-like pattern: 6.4%
- Homogeneous pattern 6.4%

The rest of the patterns were displayed at a minor rate. Nevertheless, it is interesting to observe that this study compares dermoscopic features between different melanocytic nevi. In the case of the junctional nevus, the parallel furrow pattern is present in 8 patients; followed by the lattice-like pattern, which is present in 3 and the atypical pattern, present in 3 patients as well. Lastly, the fibrillar, homogeneous patterns are present in 1 patient each.

## INTRACORNEAL HEMORRHAGE DERMOSCOPY

A study by Zalaudek et al. highlights (12) the presence of dermoscopic features found in 15 patients manifesting intracorneal hemorrhage.

### Color

- Reddish black (40%)
- Brown to black (33%)
- Blackish gray to brown-gray (26.7%)

### Pigmentary pattern

- Blackish-red homogeneous pigmentation (53.3%) 6 cases.
- Parallel ridge pattern (pigmentation along the ridges) (40%) 5 cases
- Parallel furrow pattern (pigmentation along the furrows) (40%) 1 case
- Fibrillar pattern (perpendicular lines along the ridges) 1 case

**Peripheral blackish-red globules** or independent satellites of the lesional body (46.7%)

Another study by Faruk et al.<sup>18</sup> involves the participation of 20 patients, 10 men and 6 women. The average age of the group is 41.4 and the average lesional evolution corresponds to a month. The most frequent location turned out to be the sole of the foot (12.60%), followed by the palms of the hands (25%). Out of the 20 participants, only 4 presented with previous trauma, and 2 were taking anticoagulants. The scraping test was considered positive in all cases.

Dermoscopically, the predominant pigmentary pattern turned out to be homogeneous (13.65%). At the same time, 55% of the sample presented with a globular pattern, and 40% manifested a parallel ridge pattern. 40% of the cases presented with a combination of the globular and homogeneous pattern. In 30% of the cases, globules were separated from the lesional body. Moreover, in 10% of the cases, globules were located in the homogeneous pigmentation.

Uslu et al.<sup>19</sup> report an IH case manifesting clinical and dermoscopic features of acral lentiginous melanoma. Even though this case highlights the differences between the dermoscopic features of the melanoma and the intracorneal hemorrhage (melanomas display different colors, a parallel ridge pattern and regressive dermoscopic features, while IH exposes homogeneous pigmentation associated with peripheral globules or satellites and a 40% probability of parallel ridge pattern presence), it also confirms there are features suggestive of melanoma. Therefore, histopathology was a decisive factor.

DIFFERENTIAL DIAGNOSIS

This would be performed in the case of plantar warts, lentigines, acral melanocytic nevi, dysplastic nevi, acral melanomas or traumatic hemorrhage. Both the intra-corneal and subcorneal hematoma may represent a challenge while performing their respective differential diagnoses with the in situ or invasive acral lentiginous melanoma. As Kaminska’s article states,<sup>20</sup> the parallel ridge pattern, which is highly suggestive of melanoma, is present in 40% of IH cases. At the same time, the article also reveals that it is not always easy to distinguish the location of the pigmentation, whether it is ridged or furrowed. Furthermore, the fact that the lesion is older and shows a parallel ridge pattern complicates the differential diagnosis between frictional purpura and acral melanoma.<sup>5</sup> This occurs even with occupational pigmentary lesions, which exhibit a parallel ridge pattern. For example, Tanioka et al. reported the case of a worker that soaked his boot in paraphenylenediamine, which caused him to manifest plantar lesions.<sup>21</sup> This results in complicated diagnoses for pigmented lesions. As a consequence, to perform a correct diagnosis, a thorough clinical exam is required, along with a rigorous dermoscopy, histopathology and scraping test.

DISEASE EVOLUTION

Lesions resolve spontaneously after some time as the affected stratum corneum detaches itself. However, to accelerate the resolution process, the stratum corneum may also be removed.<sup>11</sup>

|                   | COLOR NEGRO - ROJIZO | COLOR MARRON A NEGRO | COLOR GRIS OSCURO A GRIS MARRÓN | PATRÓN HOMOGÉNEO | PATRÓN GLOBULAR | PATRÓN PARALELO DE LA CRESTA |
|-------------------|----------------------|----------------------|---------------------------------|------------------|-----------------|------------------------------|
| Zalaudek 15 casos | 40%                  | 33%                  | 26,7%                           | 53,3%            | 46,7%           | 40%                          |
| Faruk 20 casos    | Predomina            |                      |                                 | 13,65%           | 55%             | 40%                          |
| Uslu 1 caso       |                      | +                    |                                 |                  |                 | +                            |

## TREATMENT

Treatment is not usually required as this case is benign and auto-limited.

## CONCLUSION

Although the clinical diagnosis of intracorneal hemorrhage is relatively easy to perform, and more so when there is medical history of focal trauma, there are cases which may be confused with melanocytic nevi (22); particularly when dermoscopies show features consistent with melanocytic nevi or acral melanomas. Furthermore, these cases may be accompanied by unusually negative scraping tests and dermoscopies manifesting confusing colors and patterns. Nonetheless, this technique has proven to be a non-invasive method that facilitates diagnosis.

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