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Atypical Intraepidermal Melanocytic Proliferation – But now what?

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Background/Objectives: Atypical Intraepidermal Melanocytic Proliferation (AIMP) is a descriptive histopathologic term that has alternative meanings at different institutions. It can include atypical lentigines or evolving/early dysplastic junctional nevi as well as melanoma in situ (MIS) but whose features are insufficient for a diagnosis of melanoma.[1] This leads to inconsistent management recommendations. Our surveys of expert dermatopathologists about how these types of lesions are handled at other institutions yielded extensive variability in the definition of AIMP. This underscores the urgent need to better understand this entity.

Methods: In this retrospective study, a cohort of AIMP cases was selected. All cases were limited to the year 2008 so that longer follow up data could be collected.

Results: A total of 529 cases were evaluated, 312 met inclusion criteria. Females outnumbered males 2:1. The majority of AIMP's were located on areas of the body with intermittent sun exposure (back, lower legs, arms, chest). The differential diagnosis listed by the clinician was "atypical junctional nevus" (or variants that included the words "atypical" or "dysplastic") in 70.0% of cases followed by "melanoma" in only 7.9% of cases (Figure 1). Of the 312 cases of AIMP, 5 (1.6%) were found to be melanoma on re-excision. Of these, 4 (80%) were on maximally sun-exposed areas (face/scalp or ears). For the differential diagnosis, clinicians included "melanoma" in 3/5 of the cases (60%). For all 319 patients, all subsequent biopsies performed between 2008 to 2017 were looked at to see if any had occurred in the same location as the previous AIMP's. 2/312 (0.64%) of cases had the same location identified as the site of the previous AIMP's suggestive of progression to melanoma.

In addition, 14 cases that were determined to be AIMP at the author's institution were scanned using whole slide imaging (WSI) and an online digital slide platform. They were sent to expert dermatopathologists across the United States and internationally. Each dermatopathologist read the cases as they would at their own institution. These results were divided into 3 categories: benign, uncertain and malignant (Figure 2). The discrepancy between the dermatopathologists was astounding and demonstrated the value of this research.

Conclusion: In conclusion, AIMP is a poorly researched entity and when used in practice, has significant impact on patient care. One of the most significant suggestions made by the data is that AIMP found on sun-exposed areas may warrant re-consideration as a lentigo maligna. Another important

implication made by this data is that few AIMP's progress over time to become melanoma. This has important implications for patients and their care.

Figure 1. The differential diagnoses included by clinicians with the biopsies of lesions that were read as Atypical Intraepidermal Melanocytic Proliferation by dermatopahtologist's at the author's institution.

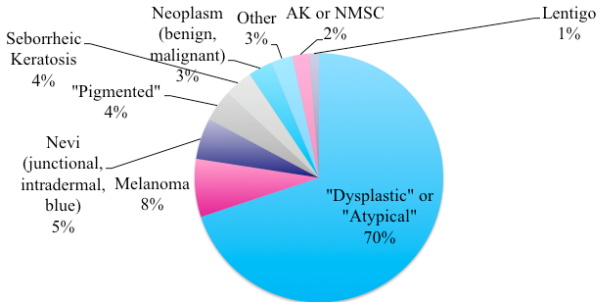
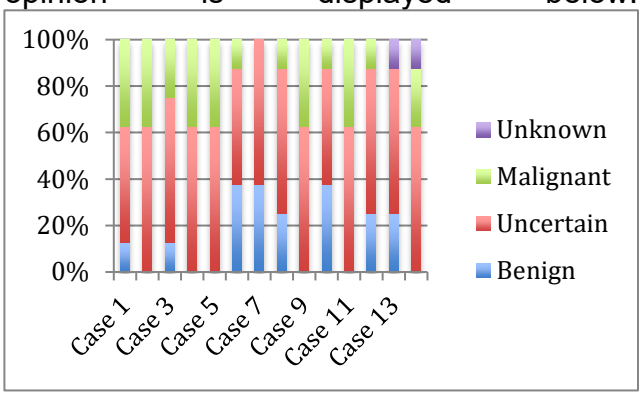


Figure 2. 14 cases of AIMP were sent as whole slide digital images to expert dermatopathologists across the United States and internationally. The diversity of opinion is displayed below.



References:

1. Zhang, Junqian, et al. "Diagnostic Change From Atypical Intraepidermal Melanocytic Proliferation to Melanoma After Conventional Excision: A Single Academic Institution Cross-Sectional Study." *Dermatologic Surgery*, vol. 42, no. 10, 2016, pp. 1147–1154