



## Commentary

# Annular lesions of the skin: Diagnosis and management part II

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## Introduction

A differential diagnosis is essential in diagnosing skin diseases and indicates a physician's knowledge and levels of experience in specific areas. As a result of developing technologies, it has become easier to diagnose diseases more rapidly in light of printed and/or online sources; however, clinical knowledge remains the physician's most powerful weapon. It can help physicians rapidly achieve an accurate diagnosis and avoid unnecessary studies for the patient and the health care system.

Part I of this commentary discussed the historic background of the morphologic classifications of skin diseases. I attempted to elucidate the pathogenesis of ring presentation by describing infectious, papulosquamous, lichenoid, urticarial, and bullous urticarial lesions and addressing the annular presentation of drug reactions that can mimic all types of skin lesions.<sup>1</sup>

Part II includes other morphologic groups presenting with annular clinical lesions, including vasculitic, neutrophilic, granulomatous, paraneoplastic, lymphoproliferative, and figurate erythemas.

## Vasculitic annular lesions

Vasculitic skin diseases constitute a group of diseases classified depending on the size of the involved vessel. Lesions in the annular pattern can be seen in such diseases as capillaritis, pigmentary purpuric eruptions, and cutaneous vasculitis. Wang et al suggest that annular vasculitic lesions might be a manifestation of systemic diseases and recom-

mend a detailed investigation to achieve appropriate treatment.<sup>2</sup>

## Neutrophilic annular lesions

Neutrophilic dermatoses refer to a specific group of diseases that cause clinical annular lesions and have a common denominator of neutrophilia. Although the accurate reading of clinical findings and accompanying diseases and laboratory tests may help make the differential diagnosis, there may be diagnostic difficulties. These lesions may have varying sizes and atypical shapes. Making the diagnosis usually requires histopathologic confirmation. Koska et al suggest that annular neutrophilic dermatoses may be autoinflammatory due to the histopathologic findings and genetic mutations related to innate immunity.<sup>3</sup> For confirming the diagnosis of a neutrophilic dermatosis, there is still the need to perform detailed systemic investigations.

## Annular granulomatous lesions

Granulomatous skin diseases are a broad group typically characterized by the formation of granulomas in the skin and other tissues. Cutaneous lesions generally appear as erythematous papulonodules and rarely as annular plaques that may be arranged in a ringlike configuration. Uzuncakmak et al discuss diseases in this group, such as sarcoidosis, granuloma annulare, and annular elastolytic giant cell granuloma, that may have annular presentations.<sup>4</sup> The etiology of granulomatous lesions is often unclear, and granuloma formation may be associated with various systemic, infectious, and metabolic disorders, as well as foreign bodies, environmental antigens, and malignancies.

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## Figurate annulare erythema

When referring to figurate annulare erythemas, Kazandjieva et al note that the term erythema was first used circa 1780.<sup>5,6</sup> Figurate erythemas are defined as annular, circinate, concentric, polycyclic, or arciform erythematous skin lesions. This group includes several diseases presenting with erythematous annular lesions. Such diseases may disappear at various intervals, including erythema annulare centrifugum, erythema marginatum, erythema gyratum repens, erythema migrans, erythema chronicum migrans, and pediatric annular erythema.

## Annular rheumatologic diseases

Some annular skin diseases may also affect the joints. Although dermatologists often play the leading role in diagnosing these diseases, there is a need for a multisystemic approach. Unfortunately such annular lesions may pose significant clinical and pathologic problems. Recognizing annular skin diseases in patients with rheumatologic findings often may prove crucial for promptly initiating appropriate therapy.<sup>7</sup>

## Annular skin tumors and lymphoproliferative diseases

The annular presentation may develop through different mechanisms in tumors and lymphoproliferative diseases. Baykal and Polat Ekinçi discuss that from the onset of the tumor, circular lesions may appear as a depression and/or ulceration in the central area or the center of the tumor or outward expansion of the primary lesion.<sup>8</sup> A ring-shaped appearance may be due to the clustering of multiple lesions, preservation of the central area, or relatively independent processes acting on the central and peripheral components of the tumor.

## Annular and acral/facial dyskeratotic paraneoplastic disorders

While describing annular paraneoplastic diseases, Shah et al emphasize that despite the seemingly straightforward clinical diagnosis, there are often difficulties in creating a differential diagnosis, and the initial diagnosis is likely to be inaccurate.<sup>9</sup> Annular paraneoplastic diseases are beneficial in diagnosing underlying malignancies, and these lesions may sometimes be the first sign of a systemic malignancy.

## Annular skin lesions in infancy

Annular skin lesions can occur at any age; however, different diagnoses are expected in infants when compared to adults. Agnihotri and Tsoukas focus on distinguishing annular skin diseases seen in infants.<sup>10</sup>

## Miscellaneous annular diseases

Wollina et al discuss several additional annular diseases. While uncommon, recognizing their annular presentations may facilitate making the appropriate diagnosis.<sup>11</sup>

## Conclusions

Skin diseases are a large group of more than 3,000 varieties, often with very different clinical features. The clinical and histopathologic diagnostic approaches based on morphologic features vary extensively. Algorithms developed based on clinical features, such as annular, will make diagnosing easier. Some of the annular diseases may carry clues to underlying systemic disease or neoplasia. It is essential to know which systemic disease or malignancy is more probable in which clinical diagnosis and to request tests only when necessary. Although artificial intelligence is expected to replace dermatoscopy and histopathology in the future, it remains uncertain whether it can fully replace the clinician's superior intelligence for making the diagnosis. We should continue to increase the accuracy of our classic diagnoses by combining our intelligence, inspection, and percussion with artificial intelligence.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## References

1. Karadag AS. From the morphology of skin lesions to diagnosis: inspection is like reading a book. *Clin Dermatol*. 2022;40:411–413.
2. Wang HY, Robson DC, Kim SJ. Annular vasculitic lesions. *Clin Dermatol*. 2023;41:326–339.
3. Koska MC, Karadag AS, Durdu M. Annular neutrophilic dermatoses. *Clin Dermatol*. 2023;41:340–354.
4. Uzuncakmak TK, Durdu M, Karadag AS. Granulomatous annular diseases. *Clin Dermatol*. 2023;41:355–367.
5. Kazandjieva J, Bogdanov G, Bogdanov I, Tsankov N. Figurate annular erythemas. *Clin Dermatol*. 2023;41:368–375.
6. Summerly R. The figurate erythemas and neoplasia. *Br J Dermatol*. 1964;76:370–373.

7. Paolino G, Rongioletti F. Annular dermatoses with rheumatologic implications. *Clin Dermatol.* 2023;41:376–381.
8. Baykal C, Polat Ekinci A. Annular skin tumors and lymphoproliferative diseases. *Clin Dermatol.* 2023;41:382–395.
9. Shah R, Truong T, Schwartz RA, et al. Annular and acral/facial dyskeratotic paraneoplastic disorders. *Clin Dermatol.* 2023;41:396–404.
10. Agnihotri G, Tsoukas MM. Annular skin lesions in infancy. *Clin Dermatol.* 2023;41:405–412.
11. Wollina U, Fölster-Holst R, Karadag AS. Miscellaneous annular diseases. *Clin Dermatol.* 2023;41:413–421.