

Red-eared zebra diagnosis

Case of relapsing polychondritis

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Relapsing polychondritis is an autoimmune disease that causes inflammation and destruction of the type 2 collagen found in cartilaginous structures including the pinna, nose, tracheobronchial airways, and cardiac valves.¹ Both sexes are affected equally,² with the peak incidence occurring between the fourth and sixth decades of life.³ Although uncommon, with a prevalence of 3.5 to 4.5 cases per million,³ family physicians might be the first professionals to encounter these symptoms, link patients with the appropriate specialist services, and make a timely diagnosis.

Rare diagnoses can also masquerade as common diseases. Upward of 89% of individuals with relapsing polychondritis will develop auricular inflammation with erythema, swelling, and tenderness,⁴ which can resemble cellulitis or infectious perichondritis,⁵ as we initially thought in this case. On average, a definitive diagnosis is delayed by 3 to 21 years and is often only obtained after consultations with 5 physicians.⁶ During this period, substantial morbidity can develop, including facial deformities such as cauliflower ears and saddle nose,⁷ and multiorgan dysfunction such as dilated cardiac valves and airway collapse, which are the leading causes of mortality.⁸ We present this case encountered in family practice and describe the collaboration among medical specialties in obtaining the diagnosis.

Case

N.K. is a 59-year-old homemaker who presented to a community emergency department with a 4-day history of an inflamed, painful left pinna. There was no trauma, sunburn, or irritant exposure (**Table 1**).⁹ Her medical history was relevant for 40 pack-years of smoking, osteoarthritis, and well-controlled hypertension. She was prescribed a 7-day course of cephalexin for presumed cellulitis.

Despite completing the course of antibiotics, there was minimal symptom improvement. She was reevaluated at our clinic. The helix was erythematous and exquisitely tender, while the earlobe was spared. No fever, lymphadenopathy, sinus tenderness, or tympanic membrane abnormalities were detected. Results of her cardiopulmonary examination revealed no respiratory findings or heart murmurs. Two additional courses of broad-spectrum antibiotics with a nonsteroidal anti-inflammatory drug were prescribed, with the latter substantially improving her discomfort. An urgent telephone consultation with an infectious disease specialist broadened the differential diagnosis to include rheumatologic processes, given the lack of response to antibiotics. Her family physician (S.E.) conducted a literature review and identified relapsing polychondritis as a possible diagnosis, and N.K. was referred to a rheumatologist for confirmation.

As this was her first presentation of auricular chondritis, her rheumatologist believed that relapsing polychondritis was a possible diagnosis, although N.K. did not yet meet the diagnostic criteria (**Box 1**).⁹ Results of an inflammatory panel were positive for antinuclear antibody (ANA) and anti-neutrophil cytoplasmic antibody (ANCA), which were nonspecific. Results were negative for perinuclear ANCA, autoantibodies for cyclic citrullinated peptide, and autoantibodies for extractable nuclear antigens. Her C-reactive protein level was normal. The nonsteroidal anti-inflammatory drug was continued and her symptoms resolved.

Editor's key points

- ▶ Relapsing polychondritis is a rare autoimmune disease that can cause disfigurement and is associated with potentially life-threatening complications including airway collapse, congestive heart failure, and increased risk of malignancies.
- ▶ Inflamed cartilaginous structures are the most common presentation of relapsing polychondritis, which often mimics other conditions more frequently seen in family medicine such as cellulitis, dermatitis, and trauma.
- ▶ Collaboration among medical specialties is important for obtaining the diagnosis and managing associated complications.

Points de repère du rédacteur

- ▶ La polychondrite récidivante est une maladie auto-immune rare qui peut causer la défiguration et est associée à des complications potentiellement mortelles, notamment le collapsus des voies aériennes, l'insuffisance cardiaque congestive et un risque accru de tumeurs malignes.
- ▶ La polychondrite récidivante se présente le plus couramment comme une inflammation des structures cartilagineuses, qui ressemble souvent à d'autres problèmes fréquemment observés en médecine familiale, comme la cellulite, la dermatite et certains traumatismes.
- ▶ La collaboration entre les spécialistes médicaux revêt de l'importance pour poser le diagnostic et prendre en charge les complications associées.

Table 1. Differential diagnosis of auricular inflammation

CATEGORY	REPRESENTATIVE CONDITION
Infectious	<ul style="list-style-type: none"> • Cellulitis, perichondritis • Otitis externa • Tuberculosis • Leprosy • Congenital syphilis (in neonates)
Trauma	<ul style="list-style-type: none"> • Frostbite • Sunburn • Insect bite
Inflammatory	<ul style="list-style-type: none"> • Sarcoidosis (lupus pernio) • Granulomatosis with polyangiitis • Relapsing polychondritis
Dermatologic	<ul style="list-style-type: none"> • Contact dermatitis • Cystic chondromalacia • Chondrodermatitis nodularis helicis

Data from Damiani and Levine.⁹

Box 1. Diagnostic criteria

Relapsing polychondritis is characterized by ≥ 3 of the following clinical criteria:

- concurrent bilateral auricular chondritis;
- nonerosive seronegative inflammatory polyarthritis;
- nasal chondritis;
- ocular inflammation;
- respiratory tract chondritis;
- cochlear or vestibular damage causing hearing loss, tinnitus, or vertigo; or
- ≥ 1 of the above clinical criteria with histologic confirmation; or
- chondritis at ≥ 2 non-contiguous locations responsive to dapsone or corticosteroids

Data from Damiani and Levine.⁹

Unfortunately, a second flare occurred 4 months later, this time affecting the right ear (**Figure 1**). A daily 25-mg dose of prednisone was tried, with an excellent response. The clinical diagnosis of relapsing polychondritis was made, as there was chondritis at 2 non-contiguous locations demonstrating a response to corticosteroids.⁹ Our patient was further evaluated by an otolaryngologist, and a rhinolaryngoscopy ruled out life-threatening inflammation of the larynx and subglottic structures. She was eventually transitioned to corticosteroid-sparing therapy of 400 mg of hydroxychloroquine daily and 7.5 mg of methotrexate weekly.

Discussion

Undifferentiated presentations are commonplace in family medicine, and maintaining a broad differential diagnosis after ruling out common conditions is essential. In this case, the diagnosis of relapsing perichondritis was made after 3 failed antibiotic courses for presumed cellulitis, which is the more typical condition seen in clinical practice. Given our lack of familiarity with the diagnosis, we performed a MEDLINE search (2000 to September 2015) using the MeSH terms *polychondritis*, *relapsing*; *diagnosis*; and *adults*. The search returned 248 articles, with most describing life-threatening complications

Figure 1. A second flare of auricular inflammation 4 months after the original presentation affecting the right ear instead of the left: Arrows show erythema, swelling, and thickening of the right helix, antihelix, and antitragus. This patient tolerated wearing earrings, as the lobes were spared bilaterally.



including critical subglottic stenosis, encephalitis, and malignancies. To our knowledge, this is one of the few reports described from a family medicine perspective, where a diagnosis was achieved before severe clinical sequelae emerged.

We highlight some clinical pearls in the literature. While no physical examination finding is pathognomonic, a swollen, erythematous ear, with sparing of the lobe—which, of course, has no cartilage—warrants consideration of relapsing polychondritis.⁶ A systematic history and targeted physical examination is needed to identify other sites of inflammation, which might advance the pretest probability in favour of an infectious versus a general rheumatologic condition. For instance, the absence of preauricular lymphadenopathy favours an inflammatory over an infectious process.¹⁰ An ocular examination might reveal scleritis characterized by photophobia and erythema that spares the limbic border.¹¹ Concurrent hearing loss, vertigo, and tinnitus can occur with vestibular system involvement.¹² Inspiratory stridor, hoarseness, and tenderness to palpation over the thyroid cartilage are ominous findings and portend laryngotracheal compromise, which requires urgent airway assessment and management.²

Relapsing polychondritis remains a clinical diagnosis, and involving rheumatology and otolaryngology specialists is both warranted and helpful. Currently, no laboratory investigation provides a definitive diagnosis; a substantial antibody titre to type 2 collagen is supportive, but unfortunately testing is not readily available in most communities.¹ A biopsy is not required per se when the classical clinical features are present, but if one is obtained, a deep-tissue sample is crucial for detecting the characteristic histology of inflammatory infiltration at the fibrocartilaginous junction.¹ Relapsing polychondritis is associated with nonerosive

seronegative polyarthropathy, and tests results for rheumatoid factor, ANA, and ANCA are often negative in the absence of a concurrent rheumatologic condition.²

Approximately one-third of patients with relapsing polychondritis will have a secondary autoimmune disease, connective tissue disease, or malignancy.¹³ Hematologic malignancies and myeloproliferative disorders are the most prevalent, although lung, colon, and breast tumours have also been reported.¹⁴ After an informed discussion regarding the potential increased malignancy risk, we elected to continue cancer screening in accordance with the Canadian Task Force on Preventive Health Care guidelines,^{15,16} and we adopted a symptom-based approach for investigating autoimmune diseases. While our patient did have positive results for cytoplasmic ANCA and ANA, her creatinine level was unremarkable, and she had no pulmonary findings suggesting vasculitis. She did have occasional microscopic hematuria, and because of her smoking history, cystoscopy was conducted, which ruled out a bladder neoplasm.

A daily 0.5- to 1-mg/kg dose of prednisone is the mainstay of treatment, with the goal of tapering to the lowest tolerated dose once sustained disease remission is achieved.¹⁷ As a part of the periodic health assessment, management of steroid-associated complications, including diabetes and osteoporosis, are integral components. For our patient, a bisphosphonate was initiated because of an elevated fracture risk noted after bone densitometry.

Conclusion

Relapsing polychondritis is rare and presents similarly to other conditions including cellulitis and contact dermatitis. A high index of suspicion is needed, particularly when the inflammation is limited to cartilaginous structures. This case report highlights the collaboration required among medical specialties to obtain the diagnosis and manage associated complications. ✪

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Competing interests

None declared

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