A 21-month-old Caucasian female with a history of eczema was referred to the pediatric surgery clinic for evaluation of bilateral axillary and right inguinal lesions of four months’ duration. The lesions varied from 0.5 cm to 1 cm in diameter and were red in colour, fluctuant and nontender (Figures 1 and 2). There had been no response to oral antibiotics, and the left axillary lesion had been spontaneously draining pus (Figure 2). The child remained well and active, with no history of fever, night sweats, weight loss or cough. She had sustained a hamster bite to one of her fingers a few weeks before the appearance of these lesions. Her family operated a potato farm that had dogs and cats but no large farm animals. There was no history of travel or exposure to tuberculosis. The remainder of the physical examination was unremarkable, and her complete blood cell count and serum immunoglobulin levels were normal.

What is the diagnosis?
infections requires a strong TH1 response, and it is possible that the
Predisposing factors for NTM infection in healthy children have not
NTM infection. Person-to-person transmission is rare (5).
seems unlikely that the hamster bite played any role in this child’s
ing public health interest (4). Transmission occurs through inhala-
most common human NTM pathogens, and, as such, is of increas-
animals (1). Tap water is considered to be the major reservoir for
water, food products, plant material, birds, and domestic and wild
appears to increase the risk of
causing NTM lymphadenitis, as exposure to swimming water
testing may show geographic variability in the predominant species

DISCUSSION
Lymphadenitis is the most common manifestation of NTM
infection in children, generally occurring in otherwise healthy
children younger than five years of age. MAC is most commonly
linked to this condition, although Mycobacterium scrofulaceum was
the predominant etiological agent when the disease was first
recognized (1). Other mycobacterial species isolated from patients
with lymphadenitis include Mycobacterium fortuitum, Mycobacterium
chelonae, Mycobacterium malmoense, Mycobacterium kansasi, Mycobacterium
intracellulare, Mycobacterium xenopi and Mycobacterium haemophilum (2).
Because the specific culture methods required for the recovery of
M haemophilum are not routinely employed, it is only since the advent of
molecular amplification testing methods that it has become evident that
M haemophilum may be the next most common species, after MAC, to cause
lymphadenitis (2). Future studies employing nucleic acid amplification
testing may show geographic variability in the predominant species
causing NTM lymphadenitis, as exposure to swimming water
appears to increase the risk of M haemophilum infection (3).

NTM organisms are ubiquitous and can be isolated from soil,
water, food products, plant material, birds, and domestic and wild
animals (1). Tap water is considered to be the major reservoir for
most common human NTM pathogens, and, as such, is of increasing
public health interest (4). Transmission occurs through inhalation,
ingestion or direct contact with environmental sources, and it
seems unlikely that the hamster bite played any role in this child’s
NTM infection. Person-to-person transmission is rare (5).
Predisposing factors for NTM infection in healthy children have not
been identified, but it is possible that they have a subtle defect in the
interferon-gamma/interleukin-12 pathway (6). Control of NTM
infections requires a strong TH1 response, and it is possible that the
predominance of the TH12 response in our patient (as indicated by
her severe eczema) interfered with her response to NTM (7).
Conversely, it has been suggested that mycobacterial infections may
protect children against symptoms of allergy (8).

Adenitis due to NTM is usually unilateral and most commonly
involves the submandibular or anterior superior cervical nodes, suggesting
an oral route of entry (9), although any lymph nodes can be involved. The axillary and inguinal involvement in the
present case can be explained if MAC entered through eczema-
tous skin lesions on the limbs. Involvement of inguinal lymph
nodes usually occurs with involvement of cervical nodes rather
than axillary nodes, as in our patient, and for an unknown reason,
bilateral inguinal disease is unusual (9). Involvement of multiple
lymph nodes is thought to occur with more pathogenic species
such as M haemophilum, which has been associated with skin
lesions, septic arthritis, sinusitis and pneumonia (3).

Patients with NTM lymphadenitis are generally well, without
 constitutional signs or symptoms (9), and have minimal tenderness in the involved area (10). Over a variable length of time
(weeks to months), the overlying skin becomes violaceous as the
nodes soften, rupture and drain through a sinus tract to the skin. Sometimes, infection resolves spontaneously or nodes heal
without rupturing, but the cosmetic outcome can be poor, with
residual fibrosis and calcification. Skin testing is usually positive if
NTM antigens are used (9), but there is no commercially available
product for such testing. A tuberculin skin test is positive in over
50% of cases (9).

Complete surgical excision of the affected lymph nodes is the
traditional treatment for NTM lymphadenitis (10). However, this can require extensive dissection of the neck, can leave scarring
and can damage the peripheral facial nerve (2). Incisional drainage is not recommended, because it commonly produces a
draining sinus tract or recurrent disease (2). Antimicrobial therapy with a macrolide with or without ethambutol or rifampin is
commonly used to obviate or simplify surgical excision. Avoidance of surgery in 30 of 45 cases (67%) with treatment with
antimicrobials has been described (4), with the success rate of
antimicrobials presumably being increased by early therapy. In
another study, clinical response was evident by one month in only
approximately 40% of cases successfully treated with antimicrobials
alone and by two months in approximately 85% (10), suggesting
that it might have been beneficial to give our patient more than a
one-month trial of azithromycin. The cosmetic result of medical
versus surgical therapy needs to be compared because significant
scarring can remain after antimicrobial therapy, especially with
spontaneous drainage of the node(s). A randomized trial of
antimicrobial versus surgical therapy is ongoing (9).

CONCLUSION
NTM lymphadenitis should be considered in all patients with viola-
ceous, nontender nodes in which exposure to tuberculosis is unlikely.

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