

## Case Report

# Thyroid abscess due to *Eikenella corrodens* in a pediatric patient

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### Abstract

*Eikenella corrodens* is one of the HACEK bacteria that is commensal microorganism of the oropharyngeal flora. *E. corrodens* has been increasingly reported to cause pyogenic abscesses, especially in diabetic or immunocompromised adults. It is less frequently reported in immunocompetent children. Here, we report a deep neck infection, including the thyroid gland, in a previously healthy girl. *E. corrodens* was the only microorganism isolated in two different cultures. Antibiotic susceptibility is variable, in contrast to other oropharyngeal pathogens. Thus, to avoid delayed treatment, *E. corrodens* should always be considered in infections of the head and neck area.

**Key words:** child; *Eikenella corrodens*; thyroid abscess.

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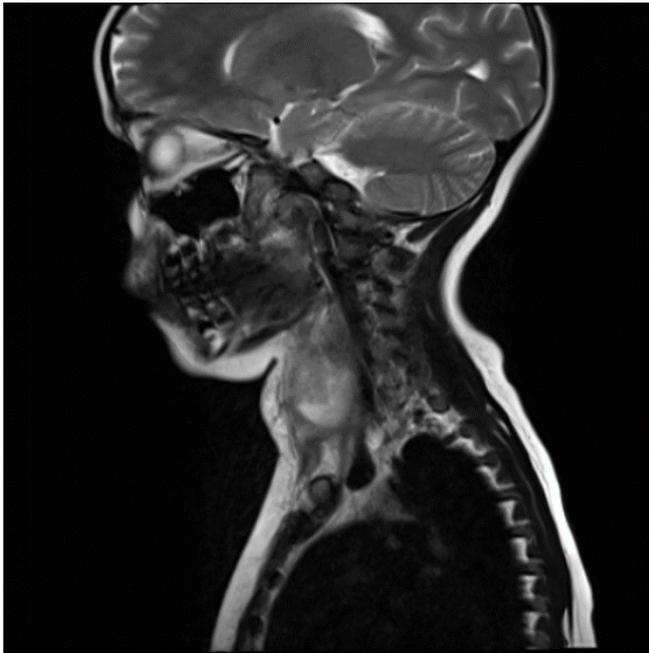
### Introduction

*Eikenella corrodens* is a facultative anaerobic, gram negative microorganism, commonly found in the oral, gastrointestinal and genitourinary flora. *E. corrodens* is usually unnoticed in routine bacteriologic examinations due to its slow growing pattern [1,2]. *E. corrodens* was believed to be nonpathogenic in the past, but it has been increasingly reported to cause pyogenic abscesses, especially in diabetic or immunocompromised adults [1,3]. *Eikenella* species can cause several infectious diseases, such as head and neck infection, sinusitis, pulmonary infection, arthritis, endocarditis, intra-abdominal infection following surgery, skeletal infection, and infection after human bite wounds. It is less frequently reported in previously healthy children, but it can cause serious deep tissue infections in case of breakdown of mucocutaneous barriers. Most of the pediatric infections are located in the head and neck region, followed by extremities and face [2]. Infections with *E. corrodens* are usually polymicrobial [4-7]. Few cases of thyroid abscesses solely caused by *E. corrodens* in children have been reported so far. Here, we report a deep neck infection, including the thyroid gland, in a previously healthy girl. *E. corrodens* was the only microorganism isolated in two different microbiological tissue cultures. She did not have any concomitant pyriform sinus fistula that could be seen along with thyroid abscesses.

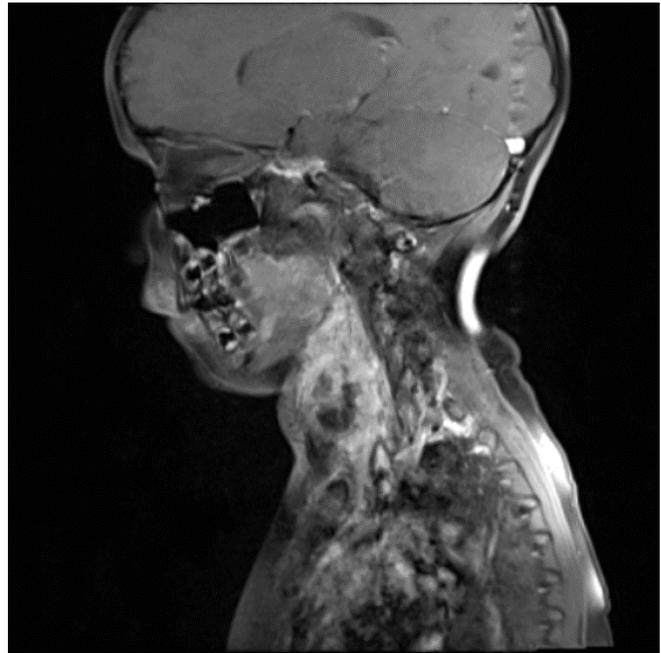
### Case Report

A previously healthy, completely vaccinated, six-year-old girl was admitted with fever and swelling of the anterior region of the neck. She had experienced upper respiratory tract infection one week ago. She was the daughter of nonconsanguineous parents with no reported diseases and did not have history of animal contact. A red, hot and tender mass was noticed at the anterior region of the neck, which limited the neck movement. There was no other pathologic finding on physical examination and she did not have tooth decay. Blood examination revealed white blood cell count of 23 800 cells/mm<sup>3</sup>, neutrophil count of 21 200 cells/mm<sup>3</sup>, lymphocyte count of 2000 cells/mm<sup>3</sup>, hemoglobin level of 12.3 g/dL, erythrocyte sedimentation rate of 82 mm/hour, and serum C-reactive protein level of 20.4 mg/L. Laboratory analyses showed that electrolyte levels, as well as liver, renal and thyroid function tests were within the normal ranges. Ultrasonography revealed a multilobulated cystic lesion in the left lobe of the thyroid gland, and magnetic resonance imaging demonstrated an abscess of 46×58×38 mm extending from the thyroid gland toward the superior retropharyngeal and posterior prevertebral spaces and the mediastinum (Figures 1 and 2). Empirical cefazolin and clindamycin treatment was initiated. Fine needle aspiration of the abscess was performed. *Eikenella*

**Figure 1.** Magnetic resonance imaging demonstrating the abscess.



**Figure 2.** Magnetic resonance imaging demonstrating the abscess.



*corrodens* was isolated in the microbiological culture of the purulent specimen, as bacteria proved clindamycin-resistant, clindamycin therapy was discontinued and switched to meropenem. Despite having undergone therapy, she had persistent fever and a second abscess developed in the right lobe of the thyroid gland, which needed to be drained. *E. corrodens* was again isolated which was susceptible to meropenem. Since this pathogen belongs to the HACEK bacterial group, echocardiogram and X-ray were regularly checked and were found to be within the normal ranges [8]. Esophagography did not show any fistula tract. Primary immunodeficiency was also investigated and serum immunoglobulin levels, peripheral blood lymphocyte subsets and results of nitroblue tetrazolium tests were found to be within the normal levels for age. A four-weeks antibiotic therapy with meropenem was carried

out until complete resolution of the abscess, indicated by laboratory and radiologic findings.

**Discussion**

*Eikenella corrodens* belongs to the HACEK group of bacteria, that includes *Haemophilus parainfluenzae*, *Aggregatibacter* spp., *Cardiobacterium* spp., *Eikenella corrodens* and *Kingella* spp. *E. corrodens* is part of the normal microbiota of the oropharynx and has been traditionally known as a cause of infective endocarditis [1,8].

Previous reports on *E. corrodens* infections concerned adult patients with either immunosuppression, chronic disorder or history of intravenous drug usage [9]. However, *E. corrodens* has been increasingly reported in previously healthy and immunocompetent children, as observed in our case. As

**Table 1.** Thyroid abscess caused by *Eikenella corrodens* in children.

Patient	Sex	Age (years)	Underlying condition	Isolated microorganism	Disturbance of thyroid function	Treatment	Reference
1	F	3.5	Healthy	Polymicrobial	None	Penicillin	[2]
2	M	7	Healthy	Polymicrobial	None	Amoxicillin	[3]
3	M	2	Healthy	<i>E. corrodens</i>	None	Penicillin	[4]
4	M	9	Fistula	Polymicrobial	Yes	Ampicillin	[5]
5	M	3	Healthy	<i>E. corrodens</i>	Yes	Ampicillin	[6]
6	M	6	Fistula	<i>E. corrodens</i>	None	Panipenem/betamipron	[7]
7	M	3,5	Healthy	<i>E. corrodens</i>	Yes	Ceftriaxone	[8]
8	F	7	Fistula	<i>E. corrodens</i>	None	Imipenem	[9]
9	F	9,3	Healthy	<i>E. corrodens</i>	Yes	Oxacillin+cefuroxime/ampicillin	[10]

it is commonly found in the oral cavity, most infections affect the head and neck region, followed by the gastrointestinal, central nervous and respiratory systems. Thyroid abscesses are among these infections, according to the report of Paul and Patel [1]. We found nine pediatric cases of thyroid abscesses caused by *E. corrodens* in the literature [2,4-7,10-13] (Table 1).

Coinfection is common in *E. corrodens* cases. Alpha-hemolytic *Streptococcus* and *Staphylococcus* species are the most common co-isolated microorganisms and *E. corrodens* can boost their virulence. Three of the cases we found in literature reported coinfection [2,4,6] (Table 1). In the present study, *E. corrodens* was the only isolated microorganism.

Pyriform sinus fistulas, which are rare congenital anomalies, can also accompany thyroid abscesses. Fistula was demonstrated by three of the cases of thyroid abscesses caused by *E. corrodens* [6,10,12] (Table 1). We did not find any congenital sinus fistula in the present case.

The thyroid functions are usually normal in cases of thyroid abscesses, as found by the present case; however, thyrotoxicosis or hypothyroidism can develop. Abnormal thyroid function tests were demonstrated in four cases of thyroid abscesses caused by *E. corrodens* [6,7,11,13] (Table 1). Thus, thyroid function must be monitored in children with *E. corrodens* abscess.

Empirically initiated treatment of oropharyngeal infections due to flora is not generally effective in *E. corrodens* because the bacteria has been shown to have different antibiotic susceptibility patterns. It is usually resistant to clindamycin, cephalexin, erythromycin and metronidazole, but sensitive to penicillin, ampicillin, second and third generation cephalosporins, carbapenems, fluoroquinolones and tetracyclines [1]. On the other hand, carbapenems and quinolones are also recommended as the first-choice antibiotics [9]. The present case was treated with meropenem.

*E. corrodens* deep tissue infections are characterized by recurrent infections and prolonged duration; thus, continuing long term antibiotic treatment is necessary, as in our patient. The slow growing pattern, the fact that it is an endogenous microorganism and the polymicrobial infections are the possible factors responsible for the *E. corrodens* pathogenesis, as suggested by Dong and Gong [14].

In conclusion, although *E. corrodens* is a relatively rare pathogen, it can cause deep tissue infections in immunocompetent children. Antibiotic susceptibility is highly variable, in contrast to other oropharyngeal

pathogens. Thus, to avoid delayed diagnosis and treatment, *E. corrodens* should always be considered when investigating deep tissue infections of the head and neck area.

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