Case Report

Maternofetal infections due to *Eikenella corrodens*

Fabien Garnier,¹ Geoffrey Masson,¹ Antoine Bedu,² Philippe Masson,³ Emmanuel Decroisette,⁴ Vincent Guignonis,² Véronique Fermeaux,⁵ Marie-Christine De Barbentane,⁶ François Denis¹ and Marie-Cécile Ploy¹

Correspondence

Fabien Garnier
fabien.garnier@unilim.fr

¹Laboratoire de Bactériologie-Virologie-Hygiène, CHU Dupuytren, Limoges, France

²Service de Pédiatrie Médicale, CHU Dupuytren, Limoges, France

³Service de Pédiatrie/Néonatalogie, CH Henri Duffaut, Avignon, France

⁴Service de Gynécologie-Obstétrique, CHU Dupuytren, Limoges, France

⁵Laboratoire d'Anatomie Pathologique, CHU Dupuytren, Limoges, France

⁶Laboratoire de Biologie, CH Henri Duffaut, Avignon, France

Received 13 April 2008
Accepted 28 October 2008

Eikenella corrodens, a commensal of the human oral cavity, is generally associated with bite wounds and head and neck infections. Neonatal infections are rare. We report two cases of premature birth associated with maternofetal *E. corrodens* infection.

Introduction

Eikenella corrodens is a component of the flora of human dental plaque and gastrointestinal mucous epithelia. *E. corrodens* has been reported to cause head and neck infections and gynaecological and intra-abdominal syndromes in patients with underlying diseases (e.g. malignancies) or predisposing factors (poor dental hygiene, intrauterine devices, etc.) (Sheng *et al.*, 2001). To our knowledge, the literature describes few paediatric cases (Paul & Patel, 2001) and only four cases of chorioamnionitis (Sporken *et al.*, 1985; Jeppson & Reimer, 1991; Andrés *et al.*, 2002; Kostadinov & Pinar, 2005). We report two cases of maternofetal infection (MFI) caused by *E. corrodens* in France.

Case reports

Case 1

A 23-year-old woman was admitted after 32 weeks and 5 days of gestation; premature rupture of the membranes occurred and chorioamnionitis was suspected on the basis of clinical and biological findings (Table 1). Intravenous amoxicillin was started, but was replaced the next day by ceftriaxone and amikacin.

Vaginal delivery of a premature girl took place 16 h after membrane rupture. The infant's clinical and biological status (Table 1) pointed to MFI. Maternal urine and placental cultures yielded the same small Gram-negative bacillus, and pathological studies showed funisitis and chorioamnionitis. The neonate's blood, ear swab and cerebrospinal fluid cultures were sterile, but a gastric aspirate grew the same bacillus.

The three Gram-negative isolates from maternal urine, the placenta and the neonatal gastric aspirate were identified as *E. corrodens* with the API 20E system (bioMérieux), and confirmed by 16S rRNA-based PCR assay as previously described (Gauduchon *et al.*, 2003).

Case 2

A 31-year-old woman was admitted for preterm onset of labour at 30 weeks of pregnancy (Table 1). Her clinical and biological status is described in the table. The delivery period was fully covered by two infusions of amoxicillin. The amniotic fluid was clear, but the premature infant had severe signs of MFI (Table 1).

Placental culture yielded a Gram-negative bacillus. In the newborn, the same Gram-negative bacillus grew from a gastric aspirate, whereas blood and cerebrospinal fluid cultures were negative.

The Gram-negative bacterium isolated was identified as *E. corrodens* by using the same identification system and molecular biology techniques as those described above.

Discussion

Few paediatric cases of *E. corrodens* infection have been reported (Paul & Patel, 2001) and, until now, only four cases (Andrés *et al.*, 2002; Jeppson & Reimer, 1991; Kostadinov & Pinar, 2005; Sporken *et al.*, 1985) of chorioamnionitis and neonatal infections have been described, including a twin pregnancy. Their clinical and biological features are summarized in Table 1. These cases strongly suggest the responsibility of this dental plaque commensal in cases of human chorioamnionitis and

Abbreviation: MFI, maternofetal infection.

Table 1. *Eikenella corrodens* neonatal cases: clinical features, antibiotic regimens and outcomes

CRP, C-reactive protein; WBCs, white blood cells; MAP, mean arterial pressure; —, unknown.

Year		Mothers					Newborns							Reference
	Age	Risk factors	Pregnancy (weeks)	Symptoms	WBCs (mm ⁻³)	Positive samples	Birth weight (g)	Symptoms	WBCs (mm ⁻³)	CRP (µg ml ⁻¹)	Treatment	Outcome	Positive samples	
2005	23	—	32 + 6 days	38.9 °C, intact membranes; premature labour; CRP= 105 µg ml ⁻¹	25 000	Urine; placenta	1830	Tachycardia; hepatomegaly	16 000; 16 % myelaemia	16	Cefotaxime (8 days) + gentamicin (3 days)	Favourable	Gastric aspirate	This study; case 1
2006	31	—	30	37.8 °C, intact membranes; premature labour; CRP= 105 µg ml ⁻¹		Placenta	1800	Pallidness; respiratory distress; infectious alveolitis; hypotension (MAP 30 mmHg); tachycardia; neonatal jaundice	10 020	41.7	Cefotaxime (10 days) + gentamicin (2 days)	Favourable	Gastric aspirate	This study; case 2
1985	28	Oral sex during pregnancy	24	38.9 °C, intact membranes; premature labour	15 200	Cervix; amniotic fluid	570	Congenital sepsis	—	—	No resuscitation	Death shortly after birth	Swabs; blood	Sporken <i>et al.</i> (1985)
1991	25	Oral sex during pregnancy	31	37.8 °C, intact membranes; premature labour	14 400	Vagina; amniotic fluid	—	None	—	—	Ampicillin (3 weeks) + gentamicin (1 week)	Favourable	None	Jeppson & Reimer (1991)
2002	28	—	28	Intact membranes; intrauterine infection	—	Vagina; cervix	1035	—	16 000	30	Ampicillin (2 weeks) + gentamicin (a few days)	Favourable	Swabs	Andrés <i>et al.</i> (2002)
2005	14	Bleeding gums; young age	23	Intact membranes; no clinical signs of infection	—	None	590	Congenital sepsis	—	—	No resuscitation	Death shortly after birth	Twin A: lung blood post-mortem	Kostadinov & Pinar (2005)
							610	—	—	—	+*	Favourable	Twin B: none	Kostadinov & Pinar (2005)

*Molecules unspecified.

premature delivery (Bearfield *et al.*, 2002). In humans, the natural habitat of *E. corrodens* is the oral cavity and gastrointestinal mucous epithelia, and to our knowledge there are no reports of *E. corrodens* in the normal vaginal flora. In three out of five reported cases, gum bleeding and oral sex during pregnancy were possible risk factors. Chorioamnionitis could have resulted from direct infection of the vagina by the partner's oral flora, from dissemination after brief bacteraemia or the organism may also have emanated from the gastrointestinal tract. The periodontal status and sexual habits of the mothers and their partners were not documented in the cases that we describe here.

Both our cases were associated with premature labour in mothers with intact membranes and only minor signs of infection. As with other oral pathogens, the amniotic infection was subclinical and the maternal outcome was good. In contrast, two of the five neonates reported elsewhere, both of whom were highly premature (24 and 23 weeks), died of neonatal/congenital sepsis. Both the cases that we describe occurred despite appropriate intrapartum antibiotic therapy, but this could have contributed to the good outcomes.

In both cases that we describe, vaginal swab cultures that were seeded when the membranes ruptured remained negative, possibly owing to overgrowth by the normal vaginal flora.

E. corrodens should thus be borne in mind as a potential opportunistic pathogen in the obstetric setting, as it can be

lethal in premature infants. Rapid empirical neonatal antibiotic therapy (Table 1) is the best safeguard.

References

- Andrés, M. T., Martín, M. C., Fierro, J. F. & Mendéz, F. J. (2002). Chorioamnionitis and neonatal septicaemia caused by *Eikenella corrodens*. *J Infect* **44**, 133–139.
- Bearfield, C., Davenport, E. S., Sivapathasundaram, V. & Allaker, R. P. (2002). Possible association between amniotic fluid micro-organism infection and microflora in the mouth. *BJOG* **109**, 527–533.
- Gauduchon, V., Chalabreysse, L., Etienne, J., Célard, M., Benito, Y., Lepidi, H., Thivolet-Béjui, F. & Vandenesch, F. (2003). Molecular diagnosis of infective endocarditis by PCR amplification and direct sequencing of DNA from valve tissue. *J Clin Microbiol* **41**, 763–766.
- Jeppson, K. G. & Reimer, L. G. (1991). *Eikenella corrodens* chorioamnionitis. *Obstet Gynecol* **78**, 503–505.
- Kostadinov, S. & Pinar, H. (2005). Amniotic fluid infection syndrome and neonatal mortality caused by *Eikenella corrodens*. *Pediatr Dev Pathol* **8**, 489–492.
- Paul, K. & Patel, S. S. (2001). *Eikenella corrodens* infections in children and adolescents: case reports and review of the literature. *Clin Infect Dis* **33**, 54–61.
- Sheng, W. S., Hsueh, P. R., Hung, C. C., Teng, L. J., Chen, Y. C. & Luh, K. T. (2001). Clinical features of patients with invasive *Eikenella corrodens* infections and microbiological characteristics of the causative isolates. *Eur J Clin Microbiol Infect Dis* **20**, 231–236.
- Sporken, J. M., Muytjens, H. L. & Vemer, H. M. (1985). Intrauterine infection due to *Eikenella corrodens*. *Acta Obstet Gynecol Scand* **64**, 683–684.