

## CLINICAL VIGNETTE

---

# Parvimonas micra: A Rare Cause of Dog Bite Wound Infection

---

Aldo Ilarde, MD and Jeanette Ilarde, MD

### *Clinical History*

A 74-year-old male presents to the office 3 days after his right hand was bitten by his pet dog. He sustained a laceration on his right wrist and had a puncture wound on the dorsum of his right hand. He was initially seen at urgent care where his wound was cleaned and thin adhesive bandages were applied to the laceration. He was prescribed amoxicillin-clavulanate 875-125 mg twice daily for ten days. His dog was behaving normally prior to and after biting him and was quarantined by animal control.

The patient has uncomplicated Chronic Lymphocytic Leukemia (CLL) but no other medical problems and is not taking any medications. He does not drink alcohol or use recreational drugs.

On clinical examination his right hand was warm, tender, and swollen. There was forearm streaking on the medial aspect of his right arm without neurovascular deficits. The laceration had some serous oozing and the right dorsum puncture wound had purulent discharge. These wounds were cultured, cleaned, and dressed. The patient was scheduled to see a hand specialist urgently and advised to continue to take his antibiotic until assessed by the specialist. His vital signs were normal, and he was afebrile.

Patient was seen by the hand specialist and he was reassured that his management was appropriate. He was advised on wound care and told to complete his antibiotic course.

His aerobic wound culture showed no growth; anaerobic culture grew *Parvimonas micra* sensitive to Penicillin, Metronidazole and Clindamycin.

Patient reported full recovery on telephone follow-up.

### *Discussion*

Dog and cat bites are common and are a common reason for emergency room visits.

One series, reported *Pasteurella* species was the most common pathogens in dog and cat bites, with *Pasteurella canis* as the most predominant isolate from dog bites. *Pasteurella dagmatis* and *Pasteurella stomatis* were also reported occasionally. The next most common aerobic isolates were: Streptococci, Staphylococci, Moraxella, Corynebacterium, and Neisseria. Fifty-six

percent of infections were mixed aerobic with anaerobic pathogen. This series reported *Fusobacterium*, *bacteroides*, *porphyromonas*, and *prevotella* species as the predominant anaerobic species.<sup>1</sup>

Our patient wound grew *Parvimonas micra* as the causative agent of his dog bite wound.

*Parvimonas micra* are gram positive anaerobic cocci (GPAC) previously named *Peptostreptococcus micros*. They were found to be phylogenetically distant from *Peptostreptococcus*, and renamed to *Micromonas micros* in 1999 and reclassified as *Parvimonas micra* in 2006.<sup>2</sup> They are the most prevalent species of GPAC in the mouth, where it considered a putative pathogen within subgingival biofilms associated with chronic and aggressive forms of periodontitis, root canal infections and failed dental implants. The organism is also found in gastrointestinal microbiota and has been implicated in skin infections and abscesses.<sup>3</sup>

One review identified 31 cases of *P. micra* infections involving cardiac valve, vertebrae, knee, hip and knee prosthesis, brain, meningeal, pleural, pulmonary, and chest wall. Sixteen (73%) of these cases were associated with various dental procedures. Other potential risk factors included diabetes mellitus, multiple myeloma, and corticosteroids.<sup>4</sup>

*P. micra* has been found in dogs with periodontitis, but not in healthy dogs.<sup>5</sup> We are not aware of dental illness in the patient's dog.

Penicillins, metronidazole, and clindamycin are generally considered the antibiotics of choice for *P. micra*.<sup>2</sup> In this case, the patient responded well to amoxicillin-clavulanate. It is important for dogs that caused *Parvimonas micra* bite infection to be evaluated for periodontitis and treated accordingly.

### REFERENCES

1. **Talan DA, Citron DM, Abrahamian FM, Moran GJ, Goldstein EJ.** Bacteriologic analysis of infected dog and cat bites. Emergency Medicine Animal Bite Infection Study Group. *N Engl J Med.* 1999 Jan 14;340(2):85-92. doi: 10.1056/NEJM199901143400202. PMID: 9887159.
2. **Uemura H, Hayakawa K, Shimada K, Tojo M, Nagamatsu M, Miyoshi-Akiyama T, Tamura S, Mesaki**

- K, Yamamoto K, Yanagawa Y, Sugihara J, Kutsuna S, Takeshita N, Shoda N, Hagiwara A, Kirikae T, Ohmagari N.** Parvimonas micra as a causative organism of spondylodiscitis: a report of two cases and a literature review. *Int J Infect Dis.* 2014 Jun;23:53-5. doi: 10.1016/j.ijid.2014.02.007. Epub 2014 Mar 26. PMID: 24680818.
3. **Kononen E.** Anaerobic Cocci and Anaerobic Gram-Positive Nonsporulating Bacilli. In: Bennett JE, Dolin R, Blaser MJ, *Principles and Practice of Infectious Diseases. Vol 2. 8th ed.* Philadelphia: Elsevier; 2015. p. 2781-2786.
  4. **Cobo F, Rodríguez-Granger J, Sampedro A, Aliaga-Martínez L, Navarro-Marí JM.** Pleural effusion due to Parvimonas micra. A case report and a literature review of 30 cases. *Rev Esp Quimioter.* 2017 Aug;30(4):285-292. Epub 2017 May 24. PMID: 28537064.
  5. **Kačirová J, Maďar M, Štrkolcová G, Maďari A, Nemcová R.** Dental Biofilm as Etiological Agent of Canine Periodontal Disease. Located at: <https://www.intechopen.com/books/bacterial-biofilms/dental-biofilm-as-etiological-agent-of-canine-periodontal-disease>.