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Exsudative otitis externa in a man by toxigenic *Corynebacterium ulcerans* acquired from his pet dog

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Background: *Corynebacterium (C.) ulcerans* is an emerging zoonotic pathogen in several industrial countries that may cause both wound infections and classical respiratory diphtheria in humans. Companion animals are increasingly recognized as an important reservoir of toxigenic *C. ulcerans* with documented transmission to humans. In contrast, person-to-person transmission seems to be extremely rare, although not completely unlikely. In Germany all 20 human *C. ulcerans* isolates examined in 2015 at the German National Consiliary Laboratory on Diphtheria at the Bavarian Health and Food Safety Authority (LGL) were toxigenic.

Material/methods: In November 2015, a health care worker presenting with productive bronchitis and bilateral otitis externa at his general practitioner. A swab taken from the ear canal grew a Penicillin and Erythromycin sensitive *tox+* *C. ulcerans* strain, verified by real-time PCR and a weakly positive modified Elek test. Multilocus sequence typing (MLST) based on seven housekeeping loci analysis was done according to Bolt et al. 2010.

Results: The patient had no vaccination card (diphtheria immunity was assumed to be at most partial), no history of foreign travel, farm visits or consumption of unpasteurised dairy products, but reported having pet animals, two dogs and one cat. The patient was treated with Amoxicillin for 7 days and recovered quickly. All human throat and nasal swabs tested were negative, but analogous

to the patient sample a *tox+*, Penicillin and Erythromycin sensitive *C. ulcerans* strain was isolated from a throat swab of one of the dogs. MLST showed an identical pattern compared to the human isolate and confirmed clonal identity as both strains were typed as ST 332, a sequence type that was formerly also found in cats and humans.

Conclusions: We report proven transmission of a toxigenic *C. ulcerans* strain between a dog and his owner in view of the increasing evidence for the emergence of toxigenic *C. ulcerans* as an important zoonotic pathogen for humans in Germany and other industrial countries. National and international guidance should specifically recommend investigation of animal sources in collaboration with veterinary authorities to reduce the risk of infection in the population.