Dental problems in a lesser dwarf lemur

Lesser dwarf lemur © Frankfurt Zoo

Even non-human primates suffer from dental problems. In lemurs, teeth might crack due to especially hard food items like certain nuts, but also sugar contents in artificial diets or gingival lesions caused by hard food insects favor the emergence of tooth disorders. We have bacteriologically examined such a lesional site from a root sepsis in a frugivorous fat-tailed dwarf lemur (*Cheirogaleus medius*) from Malagasy and have found an unusual microorganism. The bacterium *Sebaldella termitidis* is a rare fastidious germ of the *Leptotrichiaceae* family. A variety of closely related species is associated with severe and even life-threatening disease in humans and animals like for instance *Streptobacillus moniliformis*, the etiological organism of rat-bite fever as well as members of *Leptotrichia* species and *Sneathia sanguinegens*, which have been identified from cases of bacterial vaginosis and obstetric complications like postpartum and neonatal bacteraemia. Contrarily, since its original description some 50 years ago, *Sebaldella termitidis* has so far never been reported as a vertebrate pathogen, nor has it been found aside from its natural insect host. *Sebaldella termitidis* – hence the name – is an intestinal commensal bacterium of the termite *Reticulitermes lucifugus* that was named in honour of the French microbiologist Madeleine Sebald, who first described the organism. *Sebaldella termitidis* is the only species of this genus, grows exclusively anaerobically and may thus play a role as a beneficial microorganism by providing nitrogen to the natural termite host. From this exclusive habitat one can easily conclude that *Sebaldella* strains are only scarcely available to the scientific community. We have therefore stored our isolate in a public collection after thorough examination to the species level. We therefore involved classical methods of bacteriology like for instance the pattern of biochemical reactions and compared it to exactly the same strain Madeleine Sebald was working with in 1962. On the other hand we employed modern methods like molecular phylogeny and fingerprinting techniques as well as spectroscopy to unequivocally identify this bacterium to species level. We believe that *Sebaldella termitidis* was responsible in this case to have caused the lesion, because it was almost the only microorganism that could have been cultured and it grew intensely. This is the

first evidence for clinical disease caused by *Sebaldella termitidis* in a vertebrate species indicating a much broader host spectrum of this rarely encountered microorganism than previously thought. Presumably the bacterium came with some kind of feeder insect prey that the lemurs occasionally take. Bacterial diagnosis and root extraction could incidentally improve the clinical cause of the small lemur who recovered quickly and is still a valuable part of a zoo captive breeding program.

Publication

Root sepsis associated with insect-dwelling Sebaldella termitidis in a lesser dwarf lemur (Cheirogaleus medius).
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