ORAL MICROBIOLOGY IN DETECTING CHILD ABUSE CASES: A NEW PERSPECTIVE

Ines Morais Caldas

Faculty of Dental Medicine - University of Porto, Portugal

The recent and surprising discovery that the human microbiome is highly personalized opens new possibilities in the development of novel forensic approaches. Interestingly, recent studies showed that the oral microbiome presents consistent intra-individual stability and similarity over time and, equally important, consistent inter-individual variability. Regarding child abuse, bite marks are frequently found. In this context, the American Board of Forensic Odontology recommends that the bite mark is considered not only a physical evidence, where the bite mark analysis is used for comparison between bite marks on a bitten object and the suspects' teeth, but also a biological evidence, where the bite injury should be swabbed for DNA presence, to compare it with the possible perpetrator. These DNA can be human or microbial, in the specific case of bite marks from oral microbiome. Recent research indicates that this procedure should also be carried out in non-human substrate, as some researchers stated that it is possible to recover and isolate human nuclear and mitochondrial DNA and also oral human microbiome DNA from bitten foods. Although human DNA has a great discriminatory power, is difficult to recover due to its low quantity and frailty. So, oral microbiome represents an innovative alternative for perpetrator identification in a context of crimes involving bite marks. The aim of this work is to explore the possibility of using the microbiome in bite marks inflicted in child abuse for human identification purposes.

fernanda.barros@hsjoao.min-saude.pt