Diagnostic examination of human intestinal spirochetosis by fluorescent in situ hybridization for Brachyspira aalborgi, Brachyspira pilosicoli, and other species of the genus Brachyspira (Serpulina) - DTU Orbit (25/12/2018)

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Human intestinal spirochetosis, characterized by end-on attachment of densely packed spirochetes to the epithelial surface of the large intestines as a fringe has been associated with the weakly beta-hemolytic spirochetes Brachyspira aalborgi and Brachyspira (Serpulina) pilosicoli. In this study, fluorescent in situ hybridization with oligonucleotide probes targeting 16S or 23S rRNA of B. aalborgi, B. pilosicoli, and the genus Brachyspira was applied to 40 sections of formalin-fixed, paraffin-embedded intestinal biopsy specimens from 23 Danish and 15 Norwegian patients with histologic evidence of intestinal spirochetosis. Five biopsy specimens from patients without intestinal spirochetosis and three samples from pigs with experimental B. pilosicoli colitis were examined as well. In addition, the 16S ribosomal DNAs of two clinical isolates of B. aalborgi were sequenced, and a PCR procedure was developed for the identification of B. aalborgi in cultures. The genotypic characteristics of the two clinical isolates showed very high (99.5%) similarity with two existing isolates, the type strain of B. aalborgi and a Swedish isolate. Hybridization with the Brachyspira genus-specific probe revealed a brightly fluorescing fringe of spirochetes on the epithelia of 39 biopsy specimens, whereas 1 biopsy specimen was hybridization negative. The spirochetes in biopsy specimens from 13 Danish and 8 Norwegian patients (55.3%) were identified as B. aalborgi. The spirochetes in the biopsy specimens from the other 17 patients hybridized only with the Brachyspira probe, possibly demonstrating the involvement of as-yet-uncharacterized Brachyspira spirochetes in human intestinal spirochetosis.

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