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# KRIŽNA REAKTIVNOST BAKTERIJ *TREPONEMA DENTICOLA* IN *BORRELIA BURGENDORFERI SENSU LATO*

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**UVOD.** Bakterije reda *Spirochaetales*, v katerega spadata tudi rodova *Treponemae* in *Borreliae*, so monofiletičnega izvora in imajo skupne nekatere morfološke, antigenske in patogenetske značilnosti. Zaradi antigenskih podobnosti med njimi obstaja verjetnost za križno reaktivnost, ki je lahko vzrok za napačno razlago rezultatov seroloških testov pri spirohetozah.

**NAMEN.** V naši raziskavi smo želeli oceniti stopnjo križne reaktivnosti med skupino bakterij *Borrelia burgdorferi sensu lato*, povzročiteljico lymske borelioze, in bakterijo *Treponema denticola*, najpogosteje izolirano ustno spiroheto v zobnem plaku pri bolnikih z zmerno in napredovano parodontalno boleznijo.

**MATERIALI IN METODE.** Bakterijo *Treponema denticola* ATCC 35404 (*T. denticola*) smo kultivirali na NOS gojišču pri anaerobnih pogojih. Iz tako gojenih treponem smo pripravili antigen za indirektni imunofluorescenčni test (IFT), s katerim smo ocenjevali stopnjo reaktivnosti med spiroheto *T. denticola* in IgM oz. IgG protitelesi proti bakteriji *B. burgdorferi* (serumi bolnikov s sumom na lymsko boreliozo, n=303), protitelesi proti ustnim spirohetam (serumi bolnikov s parodontalno boleznijo, n=5) in protitelesi proti *T. pallidum* (serumi bolnikov s sifilisom, n=5). Kontrolno skupino predstavljajo serumi bolnikov z etiološko potrjeno drisko, ki niso preboleli nobene od spirohetoz (n=50).

**REZULTATI.** Optimizirali smo pogoje za rutinsko kultivacijo spirohete *T. denticola* na NOS gojišču v našem laboratoriju. Ugotovili smo statistično značilno pozitivno korelacijo med vrednostmi IgM in IgG proti *B. burgdorferi* oz. *T. denticola* v IFT testu (IgM:  $\rho=0.253$ ,  $p<0.005$ ; IgG:  $\rho=0.692$ ,  $p<0.001$ ), zaradi česar lahko z manj kot 0.5% tveganjem trdimo, da obstaja križna reaktivnost med bakterijama *B. burgdorferi sensu lato* in *T. denticola* ATCC 35404. Za oceno križne reaktivnosti med *T. denticola* in drugimi bakterijami (ustne spirohete, *T. pallidum*) ni bilo zadostnega števila serumov.

**ZAKLJUČKI.** Zaradi križne reaktivnosti med spirohetama *B. burgdorferi* in *T. denticola* je potrebna kritičnost pri interpretaciji pozitivnih rezultatov seroloških preiskav lymske borelioze, še posebej, kadar klinična slika borelioze ni značilna in tipična. Takrat je potrebno s parodontalnim pregledom ovreči ali potrditi možnost lažno pozitivnih rezultatov zaradi prisotnosti parodontalne bolezni.

# CROSS-REACTIVITY OF BACTERIA *TREPONEMA DENTICOLA* AND *BORRELIA BURGENDORFERI SENSU LATO*

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**INTRODUCTION.** Genera *Treponemae* and *Borreliae* are members of *Spirochaetales* bacterial group, which is of monophyletic origin. Members of *Spirochaetales* share some of morphologic, antigenic and pathogenic features. Antigenic similarities between these bacterias increase the possibility for their cross-reactivity which could be the cause for false positive results and wrong interpretation of serological tests for spirochetal diseases.

**PURPOSE.** The aim of our study was to estimate the cross-reactivity between *Borrelia burgdorferi sensu lato*, causative bacteria of Lyme disease, and *Treponema denticola*, which is one of the most often isolated oral spirochaetes from dental plaque among patients with moderate to advanced periodontitis.

**MATERIALS AND METHODS.** *T. denticola* ATCC 35404 was cultivated on NOS medium anaerobically. These treponemas were used as whole cell antigens in indirect fluorescent-antibody staining (IFA) procedure. IFA was used to assess a reactivity between *T. denticola* and antibodies of IgM and IgG class against *B. burgdorferi* (serum samples of persons suspected to have Lyme disease, n=303), antibodies against oral spirochaetes (serum samples of periodontitis patients, n=5) and antibodies against *T. pallidum* (serum samples of patients with venereal syphilis, n=5). Control group consisted of serum samples from patients with ethiological confirmed diarrhoea but no history of any spirochaetal diseases (n=50).

**RESULTS.** In our study we optimised conditions for the routine cultivation of *T. denticola* on NOS medium in our laboratory. We found a statistically significant positive correlation between values of IgM and IgG antibodies against *B. burgdorferi* and *T. denticola* ( $\rho=0.253$ ,  $p<0.005$  and  $\rho=0.692$ ,  $p<0.001$ , respectively). Results of our IFA studies indicated a significant positive correlation between *B. burgdorferi sensu lato* and *T. denticola* ATCC 35404 ( $p<0.005$ ). Lack of serum samples enabled us to assess the reactivity between *T. denticola* and other bacterias (*oral spirochaetes*, *T. pallidum*).

**CONCLUSION.** Since our study demonstrated significant cross-reactivity between *B. burgdorferi* and *T. denticola*, there is a need of criticism in interpretation of positive results of Lyme disease serological tests especially when clinical signs and symptoms of Lyme disease are not typical. In these cases periodontal status survey could help in assessment of possibly false positive results because of the presence of periodontal disease.