The effect of Sticopus hermanii- Hyperbaric Oxygen Therapy to osteogenesis of diabetic periodontitis

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Background: Diabetes and periodontitis affecting a large number of populations worldwide. Osteoprogeterin (OPG) is cytokine regulating osteoclastogenesis, related to osteoclast and osteoblast implicated in various inflammations including periodontitis and diabetes. Hyperbaric oxygen therapy (HBOT) has been used as adjuvant therapy to heal chronic wound problem. Sticopus Hermanii (SH) has been consumed as food rich with content of sulfated glycosaminoglycans (GAGs) which affect wound healing. The aim of this study is to examine the effect of HBOT and Sticopus hermanii to the exression of OPG, osteoclast and osteoblast in periodontitis diabetic rats.

Methods and Material: The reasearch was an experimental laboratories with post test only control group design. Fourty five male Wistar rats aged 8-10 weeks were equally divided in 5 groups of: healthy group (G1), diabetic periodontitis group (G2), diabetic periodontitis group treated SH (G3), diabetic periodontitis group treated with HBOT 2,4 ATA 3x30' interval 5' for 7 days (G4), diabetic periodontitis group treated with combination SH-HBOT (G5). Diabetes was conducted by single dose of streptozotocin 65 mg/kg of BW intraperitoneal, while periodontitis were induced by Porphyromonas gingivalis ATCC 33277. The OPG expressions were examined by immunohistochemistry, while the number of osteoclast and osteoblast by hematoxylin eosin staining.

Results: It was found that combination SH-HBOT (G5) in OPG could increased (12.50 ± 2.082) than diabetic-periodontitis group(G2) 2.50 ± 0.577. The combination SH-HBOT (G5) in osteoblast can increased significantly (28.47 ± 3.20) than diabetic-periodontitis group(G2) 9.22 ± 4.95. Osteoclast was decreased significantly in combination SH-HBOT (G5) 3.50 ± 0.957 than diabetic-periodontitis group diabetic-periodontitis group 0.500 ± 816. ($p<0.05$)

Conclusion: HBOT increased OPG expression and osteoblast,reduced the number of osteoclast in periodontitis diabetic rats.

Speaker Biography

Dian Mulawarmanti has completed her PhDs from Airlangga University, Indonesia. She is associate professor of Universitas Hang Tuah Indonesia as a lecturer in faculty of dentistry. She got some national research grants from Directorate of Higher Education of Indonesoian Ministry of Education & Culture about Marine Biota and HBOT Research in Dentistry since 2013 –at present.

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