

Penentuan indeks prediksi periodontitis: virus epstein-Barr, polimorfisme gen interferon-gamma, kadar interferon-gamma, sosiodemografis dan parameter klinis: kajian hubungan klinikoparametrik, genomik dan proteomik = The periodontitis prediction index of virus epstein-barr, interferon gamma gene polymorphism, the level of inteferon-gamma, sosiodemographic and clinical parameter: clinicoparametric, genomic and proteomic study

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Abstrak

Periodontitis merupakan penyakit inflamasi kronis dengan etiologi umum yaitu plak dan bakteri. Virus merupakan mikroorganisme yang diduga turut berperan dalam etiologi periodontitis. Faktor genetik yaitu polimorfisme IFN- +874T/A (rs2430561) juga dapat mempengaruhi kerentanan seseorang terhadap periodontitis. Kadar IFN- sebagai salah satu respon host terhadap virus, dapat meningkat pada subjek dengan periodontitis. Faktor prediksi periodontitis yang telah dikenal berperan dalam etiologi periodontitis adalah faktor sosiodemografis (usia, jenis kelamin), parameter klinis (body mass index (BMI), merokok dan kebersihan mulut). Polimorfisme +874T/A (rs2430561) diduga mempengaruhi kadar IFN-. Tujuan: menganalisis hubungan antara virus Epstein-Barr (VEB), polimorfisme gen interferon gamma (IFN- +874T/A (rs2430561), kadar IFN-, sosiodemografis dan parameter klinis dengan periodontitis dan mendapatkan indeks prediksi periodontitis. Tujuan kedua adalah mengetahui hubungan antara polimorfisme IFN- dengan kadar IFN-. Metode: Evaluasi dilakukan pada 136 subjek yang dilakukan pemeriksaan klinis jaringan periodontal yang telah memenuhi kriteria inklusi. Cairan krevikular gingiva (CGK) diperiksa dengan paper point kemudian dilakukan analisis kadar IFN- dengan metode ELISA dan dilakukan ekstraksi DNA dan diperiksa DNA VEB dengan metode qRT-PCR. Ekstraksi DNA dari darah perifer subjek kemudian dianalisis genotipnya dengan menggunakan teknik RFLP. Data sosiodemografis (usia, jenis kelamin) dan parameter klinis (BMI, merokok dan kebersihan mulut) diperiksa dan dianalisis. Uji multivariat regresi logistik dilakukan untuk memperoleh faktor yang paling berperan pada periodontitis. Hasil: Tidak ditemukan hubungan bermakna antara VEB dengan periodontitis ($p>0,05$), namun deteksi VEB lebih banyak ditemukan pada periodontitis sedang-berat dibanding periodontitis ringan. Polimorfisme IFN- +874T/A (rs2430561) genotip AT atau TT mempunyai hubungan bermakna dengan periodontitis (OR=2,70; $p=0,036$) dibandingkan dengan genotip AA. Hubungan bermakna ditemukan pada kadar IFN- (OR=2,87; $p=0,034$), jenis kelamin (OR=0,04; $p<0,001$) dan kebersihan mulut (OR 9,03, $p=0,002$) dengan periodontitis. Hubungan polimorfisme IFN- +874T/A (rs2430561) dengan kadar IFN- ditemukan tidak bermakna ($p>0,05$).

Kesimpulan: Indeks prediksi periodontitis model satu didapatkan faktor prediksi jenis kelamin, kebersihan mulut, kadar IFN- dan polimorfisme +874T/A (rs2430561) yang mempengaruhi periodontitis. Indeks prediksi model dua didapatkan faktor prediksi jenis kelamin, kebersihan mulut dan kadar IFN- sebagai indeks prediksi periodontitis yang

lebih aplikatif. Polimorfisme IFN- +874T/A (rs2430561) tidak mempengaruhi kadar IFN- pada subjek periodontitis.

.....Periodontitis is a chronic inflammatory disease of periodontium that has a multifactorial origin. Dental plaque and bacteria widely known as the main etiology in periodontitis. Viruses are microorganisms that are thought to play a role in the etiology of periodontitis. The IFN- genetic polymorphisms may cause an alteration in host immune response. IFN- cytokine has important roles toward virus and intracellular bacteria and the level of IFN-

increased in periodontitis patients. Sociodemographic factors (age, gender), clinical parameters (body mass index (BMI), smoking, and oral hygiene) are associated with the increased risk and severity of periodontitis. The polymorphisms of IFN- +874T/A (rs2430561) may affect the production of IFN-. Objective: to analyze the relationship between Epstein-Barr virus (EBV), interferon-gamma (IFN-) gene polymorphism +874T/A (rs2430561), IFN- levels, sociodemographic and clinical parameters with periodontitis and obtain a predictive index of periodontitis. The second objective was to determine the relationship between IFN- polymorphisms and IFN- levels. Methods: A total of 136 subjects who met the inclusion criteria were invited to participate in the study.

Periodontal status was assessed by pocket depth, clinical attachment loss, and number of teeth. The IFN- level obtained from gingival crevicular fluid were measured using Human IFN- ELISA kit. EBV DNA positivity was determined in GCF samples using quantitative real-time PCR. DNA for single-nucleotide polymorphism (SNP) genotyping was extracted from the peripheral blood and the genotype was analyzed using the RFLP technique. Sociodemographic data and clinical parameters were examined and analyzed. Multivariate logistic regression analysis was performed to identify predictors associated with periodontitis. Results: The association between EBV and periodontitis was not significant ($p > 0,05$), but the positive EBV detection was found higher in moderate-severe periodontitis than mild periodontitis. Statistically significant differences were found in IFN- +874T/A (rs2430561) polymorphism between genotype AA, AT, TT, and the protein expressions of severe and mild periodontitis samples (OR 2.70, $p = 0.036$; OR 2.87, $p = 0.034$, respectively). Gender and oral hygiene were showed significantly difference (OR 0.04, $p < 0.001$; OR 9.03, $p = 0.002$, respectively). The +874T/A (rs2430561) polymorphism association with IFN- levels was not significant ($p > 0.05$). Conclusion: The final predictive index of periodontitis consists of gender, oral hygiene, IFN- levels, and polymorphism +874T/A (rs2430561). The second model consists of gender, oral hygiene and IFN- levels which were more applicable in less lab facility. The +874T/A (rs2430561) polymorphism did not affect IFN- levels in periodontitis subjects.