Hubungan Antara Kadar Insulin-like Growth Factor-1 Saliva dengan Kelainan Email dan Waktu Erupsi Gigi Anak Stunting Usia 6-8 Tahun = Relationship Between Insulin-like Growth Factor-1 Levels in Saliva with Enamel Defects and Tooth Eruption of Stunting Children at 6-8 Years of Age

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Abstrak

Latar Belakang: Kejadian stunting di Indonesia masih tergolong tinggi jika dibandingkan dengan standar yang ditetapkan oleh World Health Organization (WHO). Menurut beberapa penelitian terdahulu, stunting dapat menyebabkan kelainan email dan keterlambatan erupsi gigi permanen. Telah dilaporkan adanya hubungan antara status gizi stunting dengan penurunan kadar IGF-1, serta hubungan antara kadar IGF-1 dengan pertumbuhan gigi terkait dengan perkembangan email dan erupsi gigi. Pengukuran kadar IGF-1 biasanya dilakukan dengan menggunakan IGF-1 darah. Diketahui bahwa saliva mengandung biomarker yang terkandung di dalam darah, termasuk IGF-1, dalam kuantitas yang lebih rendah. Tujuan: Menganalisis hubungan antara kadar IGF-1 saliva dengan kelainan email dan waktu erupsi gigi pada anak stunting usia 6-8 tahun. Metode: Penelitian ini merupakan penelitian observasi laboratorium dengan menggunakan 40 sampel saliva yang diambil dari sediaan biologis tersimpan dari penelitian tahun 2019 pada populasi siswa/i sekolah dasar (SD) kelas 1-2 Kecamatan Nangapanda, Ende, Nusa Tenggara Timur yang telah dikelompokkan berdasarkan status gizi stunting dan normal. Sampel saliva diuji menggunakan ELISA kit human IGF-1 untuk melihat kadar IGF-1. Kelainan email dinilai dengan cara menghitung jumlah gigi yang mengalami kelainan pada mahkota serta waktu erupsi gigi dinilai dengan menghitung jumlah gigi permanen yang telah erupsi. Data kemudian dianalisis dengan menggunakan program SPSS. Hasil: Kadar IGF-1 saliva pada anak status gizi normal 7,50 ng/ml dan pada anak stunting 5,64 ng/ml. Proporsi IGF-1 terhadap total protein pada anak status gizi normal 1,04×10-2 dan pada anak stunting 8,96×10-3. Rata-rata jumlah gigi yang mengalami kelainan mahkota pada anak berstatus gizi normal 2,94 gigi dan pada anak dengan status gizi stunting 1,17 gigi. Terdapat perbedaan yang signifikan pada jumlah gigi dengan kelainan mahkota antara anak bestatus gizi normal dan stunting ($p < 0,05$). Rata-rata jumlah erupsi gigi permanen pada anak berstatus gizi normal 8,29 gigi dan pada anak stunting adalah 8,04 gigi. Tidak terdapat perbedaan signifikan jumlah erupsi gigi permanen antara anak berstatus gizi normal dan berstatus stunting ($p > 0,05$). Terdapat korelasi positif lemah yang tidak signifikan antara kadar IGF-1 dengan status gizi anak usia 6-8 tahun ($r = 0,147$), korelasi positif lemah yang tidak signifikan antara kadar IGF-1 dengan jumlah kelainan mahkota gigi anak usia 6-8 tahun ($r = 0,219$), terdapat korelasi positif lemah yang tidak signifikan antar kadar IGF-1 dengan jumlah erupsi gigi permanen anak usia 6-8 tahun ($r = 0,074$). Kesimpulan: Pada anak stunting usia 6-8 tahun yang secara tidak signifikan memiliki kadar IGF-1 saliva lebih rendah dan waktu erupsi lebih lambat dibandingkan anak normal tetapi erlihat frekuensi kelainan email yang lebih tinggi. Pada kelompok sampel demikian, tidak terlihat hubungan antara kadar IGF-1 saliva dengan kelainan email dan keterlambatan waktu erupsi gigi permanen.

.....Background: The incidence of stunting in Indonesia is still relatively high when compared to the standards set by the World Health Organization (WHO). According to several previous studies, stunting can

cause enamel defects and delayed tooth eruption. It has been reported that there is a relationship between stunting nutritional status and decreased IGF-1 levels, as well as a relationship between IGF-1 levels to enamel development and tooth eruption. Measurement of IGF-1 levels is usually done using serum IGF-1. Saliva contains biomarkers that is circulating in the blood, including IGF-1, but in much lower quantities. Objective: Analyzing the relationship between IGF-1 levels in saliva with enamel defects and the time of tooth eruption in stunted children aged 6-8 years. Method: This research was a laboratory observation study using 40 saliva samples taken from stored biological samples from a 2019 study on a population of elementary school students class 1-2 Nangapanda District, Ende, East Nusa Tenggara which has been grouped based on stunting and normal nutritional status. Saliva samples were tested using the human IGF-1 ELISA kit to see the levels of IGF-1. Enamel defects were assessed by counting the number of teeth with crown defects and the time of tooth eruption was assessed by counting the number of erupted permanent teeth. The data were then analyzed using the SPSS software. Result: Salivary IGF-1 levels in children with normal nutritional status were 7.50 ng/ml and 5.64 ng/ml in stunted children. The proportion of IGF-1 to total protein in children with normal nutritional status was 1.04×10-2 and in stunted children was 8.96×10-3. The average number of teeth with crown defects in children with normal nutritional status was 2.94 teeth and in stuntedchildren was 1.17 teeth. There was a significant difference in the number of teeth with crown defects between normal and stunted children ($p < 0.05$). The average number of permanent tooth eruptions in children with normal nutritional status was 8.29 teeth and in stunted children was 8.04 teeth. There was no significant difference in the number of permanent tooth eruptions in children with normal nutritional status and stunting ($p > 0.05$). There was a weak positive correlation that was not significant between IGF-1 levels and the nutritional status of children aged 6-8 years ($r = 0.147$), a weak positive correlation that was not significant between IGF-1 levels and the number of dental crown defects ($r = 0.219$), and a correlation between IGF-1 levels and the number of permanent teeth eruption ($r = 0.074$). Conclusion: Stunted children aged 6-8 years old tend to show not significant lower IGF-1 level and delayed tooth eruption compared to normal children but had significant lower frequency of enamel defect. In such samples no significant relationship between salivary IGF-1 level and tooth eruption time could be seen.