

Association of the immune system activation markers Kynurenine-to-Tryptophan ratio (KTR) and neopterin with periodontitis

Sarala Banjara¹; Ellen Berggreen^{1,2}; Jannicke Igland³; Anne-Kristine Åstrøm⁴; Øivind Midttun⁵; Dagmar Bunæs⁴; Gerhard Sulo^{1,3}

- 1) Oral Health Centre of Expertise in Western Norway/Vestland
 2) Department of Biomedicine, University of Bergen
 3) Department of Global Public Health and Primary Care, University of Bergen, Norway
 4) Department of Clinical Odontology, University of Bergen
 5) Bevital AS, Bergen, Norway

Introduction:

Higher levels of neopterin (Np) and Kynurenine-to-Tryptophane ratio (KTR) have been associated with higher incidence and poorer prognosis of various systemic conditions, including CVD, cancer and other inflammatory conditions[1,2,3]. The evidence on the association between these biomarkers and periodontitis is sparse.

Aim:

To explore the potential association between plasma levels of Np and KTR and subsequent periodontitis status (measured about 20 years later) among community-dwelling adults residing in Hordaland County, Norway.

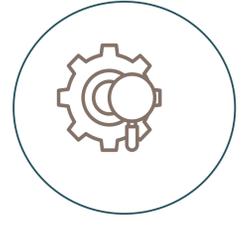
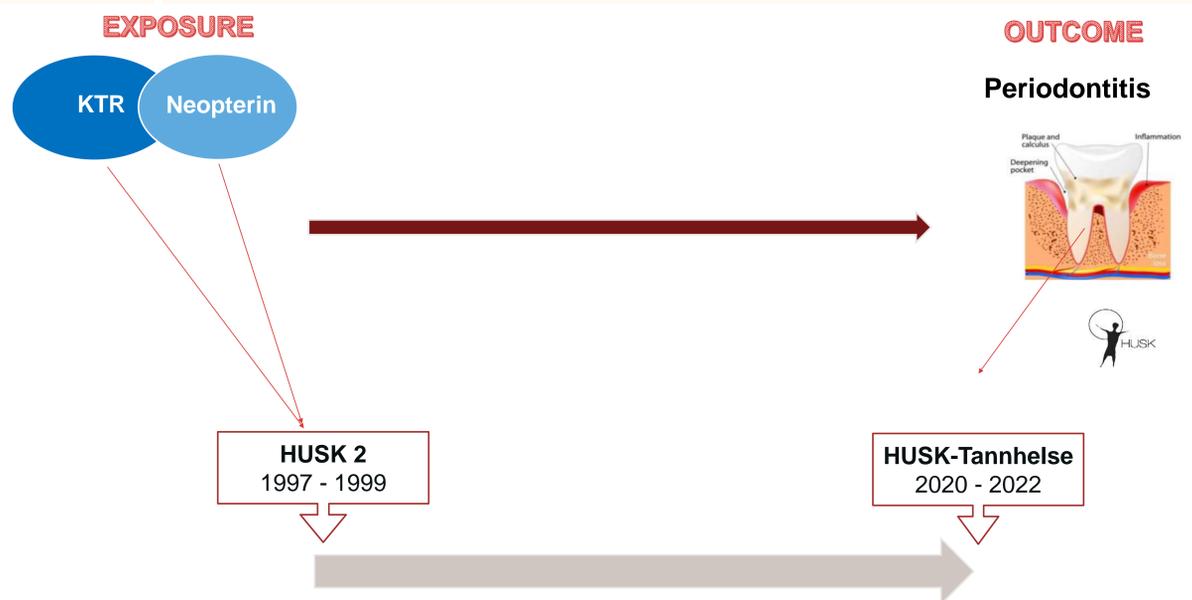
Methods:

The association between biomarkers and periodontitis was explored using ordered logistic regression analyses, adjusted for age, sex, education, BMI, smoking, and diabetes. We conducted two sets of analyses; i) with biomarker categories (in quartiles) and ii) for one SD increase in the log-transformed values as continuous variable and reported odds ratios (OR) and corresponding 95% confidence intervals (CI).

Results:

KTR: Compared to the 1st quartile, the 2nd (OR=1.48; 95% CI: 1.04 – 2.10) and 3rd (OR=1.73; 95% CI: 1.22 – 2.47) quartiles showed higher odds of periodontitis while the odds among individuals in the 4th quartile were not statistically significantly different (OR=1.34; 95% CI: 0.94 – 1.91).

Neopterin: We observed no statistically significant differences in the odds of periodontitis associated with 2nd, 3rd, or 4th quartile of neopterin compared to the 1st quartile.



Neopterin (nmol/L), median (IQR)	6.80 (5.86 - 8.13)
KTR (nmol/μmol), median (IQR)	20.18 (17.87 - 22.47)

Median concentration of biomarkers

ELIGIBILITY CRITERIA

Born in 1950-1951

Participated in HUSK 2, HUSK 3 and HUSK-Tannhelse

POPULATION

1298 participants

592 male and 706 female

DATA

Self-administered questionnaires
 Physical examination
 Blood sample(biomarkers)
 Oral examination (Periodontitis)

Periodontitis status

No	100 (7.7 %)
Mild	03 (0.3 %)
Moderate	847 (65.2 %)
Severe	349 (26.8 %)

Table: Summary of results for associations between biomarkers' level and periodontitis

Biomarkers	Odds Ratio (95% Confidence Interval)	
	Neopterin	KTR
Set one of analyses		
Q1	1 (ref)	1 (ref)
Q2	0.98 (0.69 - 1.39)	1.48 (1.04 - 2.10)
Q3	1.04 (0.73 - 1.47)	1.73 (1.22 - 2.47)
Q4	1.19 (0.84 - 1.69)	1.34 (0.94 - 1.91)
Set two of analyses		
1 SD increase in log transformed values	1.05 (0.93 - 1.19)	1.08 (0.96 - 1.23)

Q1: 1st quartile; Q2: 2nd quartile; Q3: 3rd quartile; Q4: 4th quartile
 SD: standard deviation.

Conclusion:

The association between KTR and periodontitis displayed a dose-dependent, inverted U-shape, while we observed no association between neopterin levels and periodontitis.

REFERENCES

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UNIVERSITY OF BERGEN



Tannhelsetjenestens kompetansesenter Vestland