International Poster Journal IPJ of Dentistry and Oral Medicine

Int Poster J Dent Oral Med 2004, Vol 6 No 02, Poster 228

A CD-14 Polymorphism and Periodontitis in a South-German Population

Language: English

Authors:
Priv.-Doz. Dr. med. dent. Christof Dörfer,
Dr. med. dent. Holger Meiser,
Poliklinik für Zahnerhaltungskunde,
Dr. med. Christoph Lichy,
Priv.-Doz. Dr. med. Armin J. Grau,
Neurologische Klinik,
Universität Heidelberg

Date/Event/Venue:
September, 25-28th, 2002
Jahrestagung der CED
Cardiff/Wales

Objectives

The monocyte lipopolysaccharide receptor (LPS) CD14 plays an important role in the inflammatory response by mediating activation of macrophages, which results in the release of several inflammatory cytokines, including TNF-alpha and interleukin 1 and 6. Recently a polymorphism of the CD14 gene, C(-260)→T, was detected to be associated with several chronic inflammatory diseases.

Material und Methods

Subjects and Methods

151 consecutive patients with acute ischemic stroke (T) and 149 representative population controls (C) from a case control study were screened for the presence of the C(-260)→T polymorphism by restriction length analysis.

Subjects were clinically and radiographically examined for the presence of periodontitis (panoramic radiographs, number of teeth, caries, restorations, GI, PI, probing pocket depths, clinical attachment levels, furcation defects).

All individuals were interviewed by trained interviewers using a standardized questionnaire that focused on previous diseases, vascular and periodontal risk factors, including smoking, drinking habits and nutrition, social history, previous and present medication, and a detailed assessment of dental care.

Statistical Analysis

Data were included for all subjects who completed the study. The univariate analysis compared the amount of clinical attachment loss between TT-genotype and either CT- or CC-genotypes. The multivariate analysis calculated the Odds ratios of the TT-genotype for the presence of periodontitis according to the definition of Beck (1996). The statistical unit was the single subject. The significance level was set at $p = 0.05$ by the means of a multivariate logistic regression analysis including the parameters "age", "number of teeth", "diabetes mellitus", "smoking" and "socio-economic status". All analysis were done for the whole group and separate for male subjects under the age of 60 years.

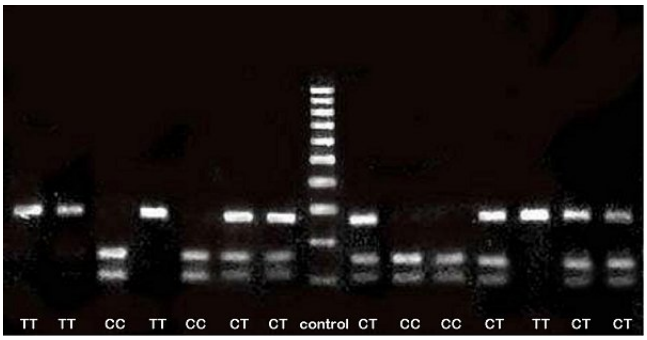


Fig. 1 Example for the agarosis gel electrophoresis. Every column re-presents one subject.

Results

Descriptive data are shown in Table 1.

Subjects	genotype	teeth lost	PI	PPD	CAL	bone loss
	CT or CC	10.3 ± 9.2	1.53 ± 0.52	3.11 ± 0.67	3.88 ± 1.09	3.31 ± 1.65

all	TT	10.4 ± 9.4	1.67 ± 0.51	3.09 ± 0.67	4.02 ± 1.41	3.38 ± 1.72
	p	n.s.	n.s.	n.s.	n.s.	n.s.
	CT or CC	9.9 ± 9.9	1.58 ± 0.53	3.12 ± 0.71	3.93 ± 1.10	3.43 ± 1.77
male	TT	11.2 ± 9.7	1.76 ± 0.51	3.25 ± 0.70	4.33 ± 1.40	3.82 ± 1.86
	p	n.s.	n.s.	n.s.	n.s.	n.s.
	CT or CC	7.3 ± 7.6	1.39 ± 0.46	3.00 ± 0.63	3.63 ± 0.99	3.03 ± 1.46
≤ 60	TT	7.9 ± 9.3	1.55 ± 0.50	2.98 ± 0.63	3.63 ± 1.16	2.99 ± 1.56
	p	n.s.	n.s.	n.s.	n.s.	n.s.
	CT or CC	7.3 ± 8.1	1.43 ± 0.49	3.06 ± 0.69	3.69 ± 0.99	3.13 ± 1.55
male ≤ 60	TT	8.2 ± 9.5	1.62 ± 0.53	3.12 ± 0.67	3.91 ± 1.25	3.29 ± 1.73
	p	n.s.	n.s.	n.s.	n.s.	n.s.

Tab. 1 Descriptive statistics (mean value ± standard deviation).

By the means of a multiple logistic regression analysis in male subjects the presence of the C(-260)→T genotype of the CD14 gene resulted in a 3.39-fold higher risk of periodontitis (95%-CI: 1.02 - 11.23).

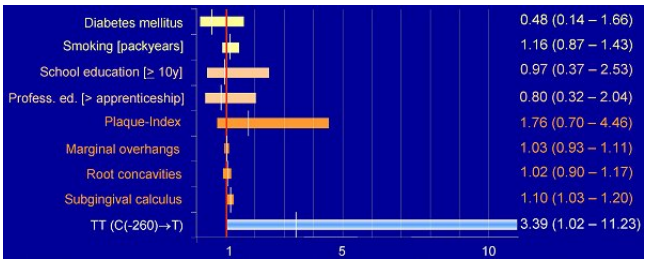


Fig. 2 Multivariate logistic regression model in male subjects on the association between periodontitis and the C(-260)→T genotype of the CD14 gene including systemic, socio-demographic and local risk factors for periodontitis. Odds ratios and 95%-confidence intervals are listed.

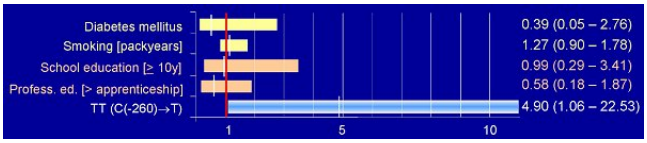


Fig. 3 Reduced multivariate logistic regression model in male subjects ≤ 60 years of age.

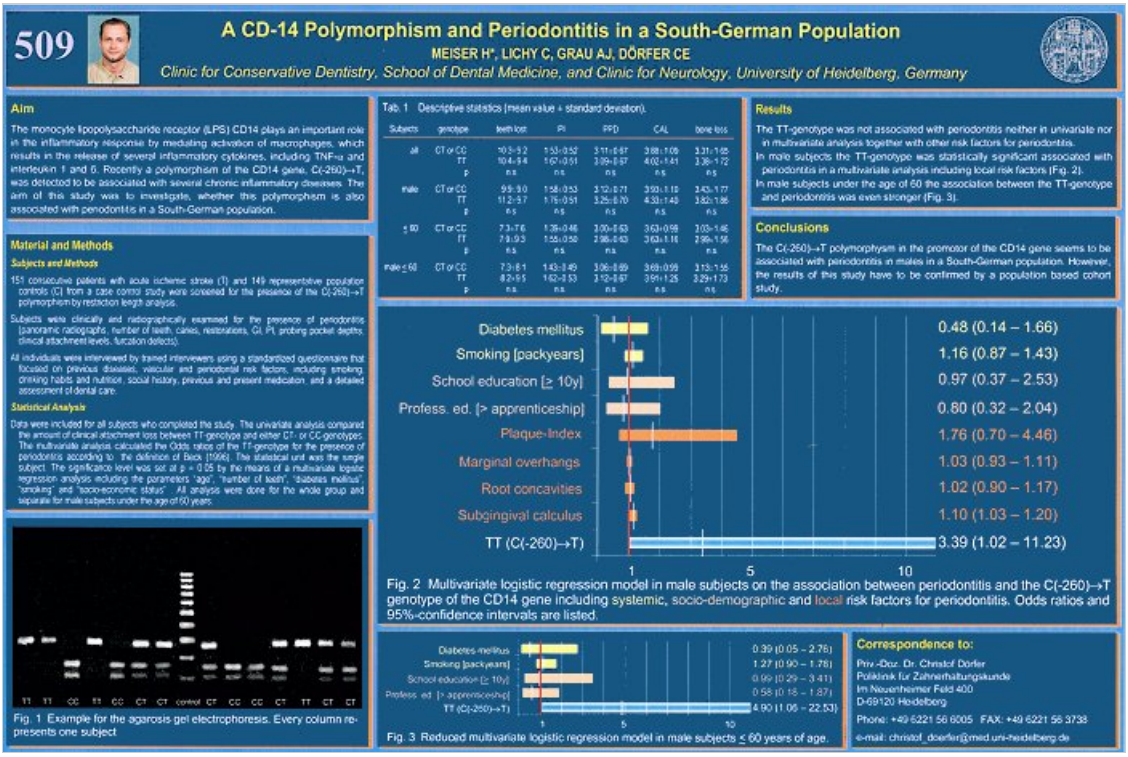
Discussion and Conclusions

Although the Odds ratios are statistically significant and independent from all known or suspected risk factors for periodontitis these results have to be confirmed by larger studies.

This poster was submitted by Priv.-Doz. Dr. med. dent. Christof Dörfer.

Korrespondenz-Adresse:
Priv.-Doz. Dr. med. dent. Christof Dörfer
Poliklinik für Zahnerhaltungskunde
Im Neuenheimer Feld 400
69120 Heidelberg
Germany

Poster Faksimile:



509

A CD-14 Polymorphism and Periodontitis in a South-German Population

MEISER H*, LICHY C, GRAU AJ, DÖRFER CE

Clinic for Conservative Dentistry, School of Dental Medicine, and Clinic for Neurology, University of Heidelberg, Germany

Aim

The monocyte lipopolysaccharide receptor (LPS) CD14 plays an important role in the inflammatory response by mediating activation of macrophages, which results in the release of several inflammatory cytokines, including TNF-α and interleukin 1 and 6. Recently a polymorphism of the CD14 gene, C(-260)→T, was detected to be associated with several chronic inflammatory diseases. The aim of this study was to investigate, whether this polymorphism is also associated with periodontitis in a South-German population.

Material and Methods

Subjects and Methods

151 consecutive patients with acute ischemic stroke (1) and 149 representative population controls (C) from a case control study were screened for the presence of the C(-260)→T polymorphism by restriction length analysis.

Subjects were clinically and radiographically examined for the presence of periodontitis (panoramic radiographs, number of teeth, caries, restorations, CAL, PI, probing pocket depths, clinical attachment levels, furcation defects).

All individuals were interviewed by trained interviewers using a standardized questionnaire that focused on previous diseases, vascular and periodontal risk factors, including smoking, drinking habits and nutrition, social history, previous and present medication and a detailed assessment of dental care.

Statistical Analysis

Data were included for all subjects who completed the study. The univariate analysis compared the amount of clinical attachment loss between TT-genotype and either CT- or CC-genotypes. The multivariate analysis calculated the Odds ratios of the TT-genotype for the presence of periodontitis according to the definition of Beck (1994). The statistical unit was the single subject. The significance level was set at $p = 0.05$ by the means of a multivariate logistic regression analysis including the parameters "age", "number of teeth", "diabetes mellitus", "smoking" and "socio-economic status". All analysis were done for the whole group and separate for male subjects under the age of 60 years.

Fig. 1 Example for the agarosis gel electrophoresis. Every column represents one subject

Tab. 1 Descriptive statistics (mean value ± standard deviation).

Subjects	genotype	teeth lost	PI	PPD	CAL	bone loss
all	CT or CC	10.5±9.2	1.53±0.52	3.11±0.67	3.88±1.09	3.31±1.68
	TT	10.4±8.4	1.67±0.51	3.09±0.67	4.02±1.41	3.36±1.72
	p	n.s.	n.s.	n.s.	n.s.	n.s.
male	CT or CC	9.9±9.0	1.58±0.53	3.12±0.71	3.93±1.18	3.43±1.77
	TT	11.2±9.7	1.76±0.51	3.25±0.70	4.33±1.45	3.82±1.86
	p	n.s.	n.s.	n.s.	n.s.	n.s.
≤ 60	CT or CC	7.3±7.6	1.36±0.46	3.00±0.63	3.63±0.98	3.03±1.46
	TT	7.9±9.3	1.55±0.50	2.98±0.63	3.63±1.16	2.99±1.56
	p	n.s.	n.s.	n.s.	n.s.	n.s.
male ≤ 60	CT or CC	7.3±8.1	1.43±0.49	3.06±0.69	3.69±0.99	3.13±1.56
	TT	8.2±9.5	1.62±0.53	3.12±0.67	3.95±1.25	3.29±1.73
	p	n.s.	n.s.	n.s.	n.s.	n.s.

Results

The TT-genotype was not associated with periodontitis neither in univariate nor in multivariate analysis together with other risk factors for periodontitis.

In male subjects the TT-genotype was statistically significant associated with periodontitis in a multivariate analysis including local risk factors (Fig. 2).

In male subjects under the age of 60 the association between the TT-genotype and periodontitis was even stronger (Fig. 3).

Conclusions

The C(-260)→T polymorphism in the promotor of the CD14 gene seems to be associated with periodontitis in males in a South-German population. However, the results of this study have to be confirmed by a population based cohort study.

Fig. 2 Multivariate logistic regression model in male subjects on the association between periodontitis and the C(-260)→T genotype of the CD14 gene including systemic, socio-demographic and local risk factors for periodontitis. Odds ratios and 95%-confidence intervals are listed.

Fig. 3 Reduced multivariate logistic regression model in male subjects ≤ 60 years of age.

Correspondence to:

Priv.-Doz. Dr. Christof Dörfer
Poliklinik für Zahnerhaltungskunde
Im Neuenheimer Feld 400
D-69120 Heidelberg

Phone: +49 6221 56 6005 FAX: +49 6221 56 3738

e-mail: christof_doerfer@med.uni-heidelberg.de