

Association between oral self care and ischemic stroke

Language: English

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Objectives

To evaluate the association between the oral self care behaviour and acute cerebral ischemia.

Material and Methods

303 consecutive patients with acute ischemic stroke (T) and 300 representative population controls (C) matched for age, gender, ethnicity and area of residence underwent a clinical and radiographic dental examination. A questionnaire was used by trained interviewers in a face-to-face interview to investigate all known and/or suspected risk factors for stroke and periodontitis as well as their oral self care behaviour (Tab. 2).

Statistical analysis

Logistic regression analysis was used to analyse the association of factors with cerebral ischemia. All factors of interest were first analysed in a univariate model with adjustment for age, gender and number of teeth in dental parameters. In the multivariate model, the mean clinical attachment loss, the mean plaque index and the number of lost teeth were included plus all other factors, which were significant in the univariate analysis ($p < 0.05$). Odds ratios and 95 % - confidence intervals are given for all factors. The software package SAS (SAS Inc., Heidelberg) was used for the analyses.

Inclusion Criteria

- native german speaker
- aged between 18 and 75 years
- resident of the greater Heidelberg area
- written informed consent
- willing to undergo an extensive dental examination and to follow an interview

Exclusion criteria

- pregnancy
- inability to give informed consent or to cooperate in the dental examination within 1 week after ischemia or admission
- any known condition in which a prophylactic antibiotic treatment before dental examination is required
- bleeding disorder
- professionals exposed to x-radiation

Tab. 1 Demographic variables

Variable	Patients with cerebral ischemia	Population controls	p-value
Age [years]	59.7 ± 11.2	59.2 ± 8.1	0.6
Gender			0.53
Male	208	213	
Female	95	87	

Tab. 1: Demographic variables

Tab. 2 Parameters of the interview and the clinical and radiographic status

Interview	
<i>General dental variables:</i>	<i>Risk factors for stroke and/or periodontitis:</i>
aids for oral hygiene	Hypertension
frequency and duration of tooth brushing	Smoking
frequency of dental visits	Diabetes mellitus
motive for dental visits	Hyperlipidemia
previous dental treatments	previous stroke/ transient ischemic attack
self assessment of the dental status	positive family history of stroke
	Coronary heart disease
	peripheral arterial disease
	atrial fibrillation
Clinical and radiographic status	
Plaque Index [Silness & Løe]	Body Mass Index
Gingiva Index [Løe & Silness]	current nutrition habits
Probing pocket depth	alcohol drinking
clinical attachment level	school education
Furcation involvement	vocational training
horizontal attachment level	current or last profession
Caries and restorations	father's and mother's profession
Pulp testing	fixed hot water
Tooth mobility	
Panoramic x - ray	

Tab. 2: Parameters of the interview and the clinical and radiographic status

Tab. 3 Logistic regression analysis for Gingivitis- and Plaque Index (simple model controlled for age, gender and number of lost teeth)

	Stroke (n)	Pop. (n)	Odds Ratio (95%-confidence intervall)	p-value
Gingivitis	258	283	1,27 (1,19 - 1,36)	< 0,001
Plaque	258	283	0,98 (0,94 - 1,02)	n.s.

Tab. 3: Logistic regression analysis for Gingivitis- and Plaque Index (simple model controlled for age, gender and number of lost teeth)

Tab. 4 Variables of oral self care

Variable	Patients with cerebral ischemia (n=300)	Population controls (n=303)	p-value
Toothbrush	98.9% (275)	99.3% (289)	n.s.
Toothpaste	97.1% (271)	98.6% (287)	n.s.
Dental floss	9.0% (25)	12.0% (35)	n.s.
Interdental brushes	10.4% (29)	11.7% (34)	n.s.
Toothsticks	13.3% (37)	8.6% (25)	n.s.
Mouthrinses	11.1% (31)	11.7% (34)	n.s.
Mouth rinses	41.0% (114)	33.3% (97)	n.s.

Tab. 4: Variables of oral self care

Results

There was no statistically significant difference between the groups in terms of the use of toothbrushes and toothpastes, flosses and interdental brushes or irrigators. In a multivariate modell with "Preceding Stroke" (OR 10,38; 95%-CI 4,39-24,54; $p < 0,001$), "Preceding Cardiovascular Disease" (OR 2,44; 95%-CI 1,13-5,29; $p=0,023$), "Hypertension"(OR 1,87; 95%-CI 1,19 - 2,95; $p=0,007$), "Diabetes mellitus" (OR 3,45; 95%-CI 1,64-7,25; $p=0,001$), "Total Alcohol Uptake" (n.s.), "Smoking" (OR 1,24; 95%-CI 1,04-1,47; $p=0,009$) and "Socioeconomic Status" (n.s.), the use of mouth rinses (OR 2,46; 95%-CI 1,38 - 4,37; $p=0,002$) and of toothpicks (OR 1,87; 95%-CI 1,07-3,27; $p=0,028$) remained a significant risk indicator.

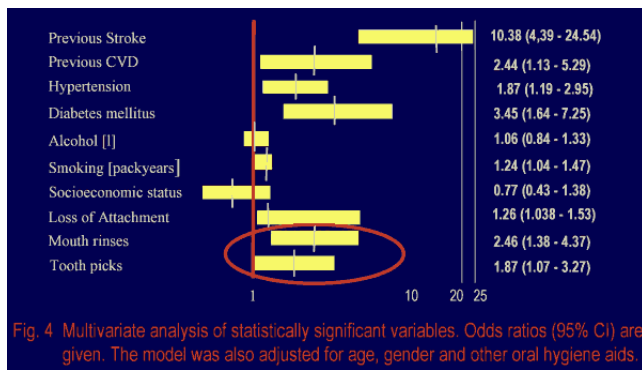


Fig. 4: Multivariate analysis of statistically significant variables. Odds ratios (95% CI) are given. The model was also adjusted for age, gender and other oral hygiene aids.

Conclusions

The associations identified in this study were found to be independent from other risk factors for stroke in an extensive multivariate model. However, oral health care is most likely an indicator of health awareness instead of a causal factor.

This Poster was submitted by Dr. Daniela Jörß.

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Aim

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Material and Methods

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Statistical analysis

Logistic regression analysis was used to analyse the association of factors with cerebral ischemia. All factors of interest were first analysed in a univariate model with adjustment for age, gender and number of teeth in dental parameters. In the multivariate model, the mean clinical attachment loss, the mean plaque index and the number of lost teeth were included plus all other factors, which were significant in the univariate analysis ($p < 0.05$). Odds ratios and 95% - confidence intervals are given for all factors. The software package SAS (SAS Inc., Heidelberg) was used for the analyses.

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Tab. 2: Parameters of the interview and the clinical and radiographic status

Interview	Risk factors for stroke and/or periodontitis
General dental variables: aids for oral hygiene frequency and duration of tooth brushing frequency of dental visits motive for dental visits previous dental treatments self assessment of the dental status	Hypertension Smoking Diabetes mellitus Hyperlipidemia previous stroke/transient ischemic attack positive family history of stroke Coronary heart disease peripheral arterial disease atrial fibrillation Body Mass Index current nutrition habits alcohol drinking school education vocational training current or last profession father's and mother's profession fixed hot water
Clinical and radiographic status	
Plaque Index (Silness & Loe) Gingivitis Index (Loe & Silness) Probing pocket depth clinical attachment level Furcation involvement horizontal attachment level Caries and restorations Pulp testing Tooth mobility Panoramic x - ray	

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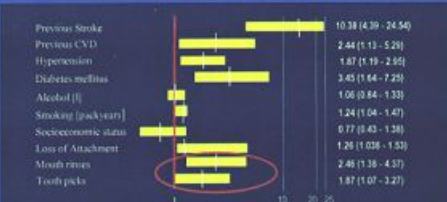


Fig. 4: Multivariate analysis of statistically significant variables. Odds ratios (95% CI) are given. The model was also adjusted for age, gender and laboratory system aids.

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The associations identified in this study were found to be independent from other risk factors for stroke in an extensive multivariate model. However, oral health care is most likely an indicator of health awareness instead of a causal factor.