Dental Insights — EuroPerio10, 2022 — Part 2

Host
European Federation of Periodontology (EFP)

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Reservations
All reservations of the correct reproduction of the course material in the notes are taken by the author.

Dental Insights

1. Alzheimers dementia (AD) and periodontitis

Everyday bacteremia is happening all the time, fx chewing and toothbrushing.

Alzheimers is a continuum, from preclinical → mild cognitive impairment → dementia.
It is believed that pathological bases for Alzheimers begin 20 eyears before symptoms appear!

Periodontitis is chronic inflammatory disorder due to bacterial dysbiosis.
Periodontal disease and the inflammatory/bacterial burden contributes to Alzheimers disease.

Periodontal inflammation/dysbiosis induce brain effects.
There is a correlation between periodontal attachment loss and brain amyloid load!

Periodontal dysbiotic index is higher in Alzheimers high risk group.

Clinical periodontal disease associates with amyloid deposition in the brain.

Periodontal disease can induce systemic inflammation, neuroinflammation, brain amyloid, tau pathology, neurodegeneration and cognitive impairment. These processes are along the pathways defining Alzheimers. We don't have enough evidence yet to create causational link, but it could be proven in the future.

Healthy oral bacteria are high in healthy individuals, and low in Alzheimers risk group. Vice versa with pathologic bacteria.

Studies show that periodontal treatment may be effective to prevent Alzheimers, but we need more research and clinical trials.

2. Cancer, rheumatoid arthritis (RA) and periodontitis

Rheumatoid arthritis and periodontitis

RA pathogenesis:
Preclinical phase: Genetic risk → Environmental risk factors → Systemic autoimmunity →
Clinical phase: Arthralgia → Undifferentiated arhtritis → Definite RA.

Epidemiological risk factors:
- Smoking
- Diet (high BMI, low omega-3)
- Hormones (menopause)
- Periodontitis (loss of mucosal barrier, oral dysbiosis)

"Mucosal origins hypothesis" = citrullination of the RA joint.

Periodontal pathogens appear differentially abundant in the crevicular fluid of RA patients.

Cancer and periodontitis

1 in 2 of people born after 1960 will be diagnosed with some form of cancer! Fortunately, many of us will get treatment.

Smoking and obesity are risk factors.

Periodontitis: can be both exposure and outcome to cancer.

Cancers that have been associated with periodontitis: MANY!

Cancer can also be caused by an infection by fx HPV, giving oro-pharyngeal cancer.

F. nucleatum (Fn) and colorectal cancer (CRC): Fn gave larger tumors, deeper tumor invasion and worse survival.

Oral microbiome and pancreatic cancer: association to P. gingivalis and A.a.

Mechanisms:
Inflammation lead to exposure and outcome.
- Modulation of inflammation (TLR and NF-kB)
- Stimulation of cell profileration and invasion (MMPs)
- Genomic instabilty with DNA damage
- Etc.

We still have big gaps in our knowledge.

Studies to date don't support a causal relationship, only associations. But they don't refute it either! We need more and better studies.

3. Personlized medicine in dentistry

Personalized medicine:
- Each person develops a disease and responds to treatments differently.
- Throughout life an individual will change in susceptibility. Customize disease-prevention strategies.
- Shift from reaction to prevention.
- Improve individual disease detection.
- Predict the person's susceptibility to disease.
- Pre-empt disease progression.

Host response is determined by:
1. Dysbiotic biofilm
2. (Epi)Genetics
3. Unfavorable lifestyle factors fx smoking, stress
4. Systemic conditions fx diabetes
5. Dentition status related factors

All of the factors have effects on the immune system blueprint give poor immune fitness.

Dental professionals can screen for the systemic diseases, especially in the perio clinic.

Prevalence of people with 2 or more (multimorbid) diseases are increasing.
People with periodontitis have increased onset of 2 or more morbidities, and they more often have less than 25 teeth.

The perio population is at great risk for developing several systemic conditions.

There are MANY common/overlapping risk factors between periodontitis and other chronic systemic diseases.

Personalized medicine: Personlized screening for individual risk of diseases.

Saliva sampling or blood sampling (a few drops).

Cardiovascular (CVD) risk calculator (SCORE) from European Society of Cardiology shows a 10-year risk of CVD mortality (low, moderate, high or very high).
Kosho et al 2022 and ACTA University in Holland are studying this.

To measure 10-year CVD risk:
1. Age
2. Systolic blood pressure
3. Smoking
4. HbA1c
5. Total cholesterol
6. HDL

30% of patients with generalized perio have very high risk of CVD in 10-years.
16% of patients with localized perio have very high risk of CVD in 10-years.
9% of controls have very high risk of CVD in 10-years.

Is it okay with patients that dentists test for such things?
88% of patients would prefer it! They would like the dentist to look at the whole body.

The 3 big risk factors:
1 or more give a high risk for future moderate/severe periodontitis.
1. Smoking
2. Diabetes
3. IL-1 genotype

Are 2 cleaning better than 1 in patients with high risk for future moderate/severe periodontitis?

Study done by Giannobile, Kornman, Doucette et al in 2013 on patients through Delta Dental Michigan Database showed:

Low risk group (47% of the study population):
1 prophy cleanings annually: 2% of patients had tooth loss.
2 prohpy cleanings annually: 0% of patients had tooth loss.

1 risk factor group (42% of the study population):
1 prophy cleanings annually: 6% of patients had tooth loss.
2 prophy cleanings annually: 1% of patients had tooth loss.

2-3 risk factor group (10% of study population):
1 prophy cleanings annually: 16% of patients had tooth loss.
2 prophy cleanings annually: 10% of patients had tooth loss.

Conclusion: 2 cleanings annually instead of just 1 annually can prevent a lot of tooth loss!

That was Dental Insights. Thank you for beging here. ❤

Dental love, Anne Mette