Consider sex as an individual risk factor in the risk assessment of periodontitis

An interview with Dr Christiane Elisabeth Gleissner on gender aspects in periodontal therapy

In recent years, gender aspects in periodontal disease have been described and studied by researchers worldwide. At the Europerio 7 congress in Vienna, Austria, DTI Group Editor Daniel Zimmermann had the opportunity to speak with Dr Christiane Elisabeth Gleissner, Germany, about the current state of research and why the sex should be considered as an individual risk factor in the risk assessment of periodontitis.

Daniel Zimmermann: Two years ago, scientists from the University of Maryland, USA, released a paper in which they claimed to have found a sexual dimorphism with regard to periodontal disease. Have any results been published since then that support their hypothesis?

Dr Christiane Elisabeth Gleissner: In a systematic review of the prevalence and the severity of periodontitis according to sex, the University of Maryland scientists attempted, for the first time, to find a sexual dimorphism in periodontitis. They found little robust data on this subject. Of out almost 2,000 studies, only 12 were considered in the review.

These studies demonstrated that men have a higher risk of attachment loss than women. This sexual dimorphism was observed across different countries and cultures, and therefore cannot be explained by socio-cultural factors alone. The male sex, however, seems to be an independent risk factor for periodontitis. New epidemiological studies from Hungary, for example, have also confirmed a higher prevalence of periodontitis in men.

It is interesting to note that this dimorphism already existed 100 years ago, as shown by a recently published study of skeletons from the late 19th and early 20th centuries by a female Portuguese scientist.

There are also differences with regard to tooth loss, the final stage of periodontal disease, which affects women more than men—for which we have no explanation. The latest figures from the Study of Health in Pomerania (SHIP) in Germany confirm that among men and women of similar socio-economic status, women have fewer teeth. This study also reported associations with men’s marital status.

In comparison with women, men seem to be more susceptible to the more aggressive forms of periodontitis. What biological basis is behind this observation?

There is clear evidence in the literature for a sexual dimorphism regarding non-specific and specific immune systems. This is demonstrated by the fact that, for example, men are more frequently affected by severe infections like sepsis than women.

In contrast, more women than men tend to develop autoimmune diseases like rheumatoid arthritis, Hashimoto’s thyroiditis and Sjogren’s syndrome.

The rejection of transplants is also more frequent in women. A possible explanation for this is that the immune system is controlled by genes and that approximately 1,000 genes play a part in the regulation of the immune system are located on the X-chromosome. The sexual dimorphism can be at least partly explained by this.

Other than susceptibility, are there other aspects of disease that are influenced by sex?

If your question asks whether sexual dimorphisms are also known in systemic disease, then I can assure you that they are. Currently, particularly in the field of medicine, much effort is directed at researching sexual dimorphisms. We are aware of the fact that women and men exhibit different symptoms of cardiovascular disease, which results in different diagnostics and pharmacotherapy, which can significantly influence the prognosis. Findings by gender medicine in view of the associations between systemic disease and gingivitis in particular have become interesting for periodontology. There is still much to do in this respect.

Hormone balance changes with increasing age. Could this affect periodontal status in any way?

The influence of the endocrine system plays a central role when it comes to seeking an explanation for the differences between the sexes. Sex hormones, in particular, appear to be able to explain a high number of sexual dimorphisms of the immune function. There is no doubt that circulating sex hormones modulate the innate and adaptive immune response and, subsequently, susceptibility of the host to infection. Periodontal disease with inflammation becomes more frequent with increasing age. We also know that the endogenous production of hormones in women and men changes significantly in old age. Therefore, it seems obvious to look for causal relations.

What other aspects could be responsible for sexual dimorphism with regard to periodontal disease?

Like most multifactorial diseases, periodontal disease is the result of a complex interplay between microorganisms, the immune system of the host and economic factors. There is evidence of sexual dimorphism regarding oral microflora in patients with periodontitis. Concerning socioeconomic factors and lifestyle factors like the consumption of nicotine, alcohol and fruit or vegetables, the differences between men and women are well known and documented. Unfortunately, this knowledge has not been incorporated into the risk analysis yet. To date, it cannot be shown whether the mentioned differences in periodontitis prevalence can be explained by nicotine consumption because we lack results from relevant studies concerning sex.

What effect could this knowledge have on the risk assessment of periodontal treatment?

It is desirable to use sex as an individual risk factor in the risk assessment of periodontitis. In view of a patient-centred approach to periodontology, it becomes increasingly important to recognise the individual needs of the patient and incorporate them into the therapy and long-term care. Supporting periodontal therapy in particular benefits from an individualised approach to patients of its long-term value.

The fact that men and women should be motivated differently has been successfully demonstrated by the advertising industry. A sex-specific communication concept can be of high value and would be, at least from my perspective, a significant step in achieving long-term success, since it respects the different needs of the sexes.

Besides this, is there anything else that clinicians should be aware of in treating men and women?

I do not think that women and men should be treated differently—although scientific data in this field is also lacking. Priorities of anaesthesies and diagnostic performances for male patients will probably be different from those for female patients. Furthermore, knowledge gained from medicine and pharmacology regarding sex-related aspects has to be integrated into periodontal therapy, such as the selection of analgesics and antibiotics or the care of female patients with diabetes mellitus, who tend to develop more complications than men.

It may also be necessary to reflect critically upon one’s own practice concept and adjust it to the different needs of men and women. This could include the design of educational material, the length of treatment, the organisation of adjunct long-term care and the prescriptive discussions. Individualised care by the dental team will generally lead to an improvement in oral health regardless of the patient’s sex.

Thank you very much for this interview.

Dr Christiane Elisabeth Gleissner speaking at Europerio 7 in Vienna. (DTI Photo Daniel Zimmermann, DTI)