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Perio Disease Diagnosis, Causality and Risk Factors

There are significant differences between diagnosis, causality and risk factors, all of which play a role in treatment planning, the predictability of treatment outcomes and managing less than ideal results.

All clinical situations in dentistry do not require the identification of the specific causality to arrive at a satisfactory clinical outcome. When there is a diagnosis of a carious lesion, identifying the bacteria responsible for the caries does not impact treatment decisions. We have arrived at the endpoint of therapy when removal of the decayed tooth structure and placement of a restoration is completed. In other words, it is sufficient in the case of caries to achieve treatment success without identifying the specific bacteria that caused the lesion.

Similarly, when we have deep caries with pulpal involvement, endodontic treatment is undertaken without the need to identify the specific causative bacteria. In these cases identification of the bacteria would not be relevant to treatment decisions or success.

Causality is critically important in many prosthodontic cases. Consideration of the factors that caused the need for prosthetic treatment must commonly be identified because they may impact treatment decisions and the longevity of the outcome. Examples include malocclusion, partial edentulism, bruxism, traumatic occlusion and periodontal condition, among others. Completing prosthodontic treatment without identifying causality can result in treatment failure, in some cases. Identification of causality may also be necessary in cases addressed by oral surgery, orthodontics and oral pathology.

In the case of periodontics, diagnosis is reliably accomplished with a variety of clinical and radiographic parameters. Periodontal disease diagnosis and case typing; however, does not provide any information regarding causality; namely the periodontal pathogens responsible for the clinical presentation. Perio disease development is the result of the interplay of the patient's genetics, immuno-inflammatory system, and the number and type of perio pathogens. It is a complex process requiring a genetically susceptible individual, and a sufficient number of perio pathogens to cause tissue destruction from a chronic immuno-inflammatory response. Without a sufficient number of the right type of bacteria, disease development cannot occur.

It is critically important to treatment success to identify the patient's risk factors including; diabetes, smoking, xerostomia, stress, hormonal variations, genetics, family history, faulty restorations and poor home care among others, but risk factors cannot

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cause perio disease on their own. Risk factors raise the likelihood of disease development and increased severity, but they are not sufficient on their own to cause perio disease.

Consider the following clinical scenario: two patients of the same age, same gender, same clinical presentation, e.g., two pockets per quadrant of 5-6mm. We treatment plan for non-surgical therapy including SRP, irrigation, locally applied and systemic antibiotics. At re-eval one patient improves considerably and the other does not. Why did this happen and what do we do now? Even though the clinical presentation was essentially identical, the underlying biological and bacterial factors must be taken into account. In other words, what is going on in each patient's mouth and body that got them to this level of gum disease? The non-responding patient may be a diabetic individual who smokes and has above average home care. The other patient may have no risk factors but has poor home care. Interestingly enough, the patient with multiple risk factors may have had the better treatment outcome. If the patient with no risk factors has high levels of red complex bacteria, and the other patient has one weak pathogen causing his disease, the favorable outcome could be in the patient with the risk factors.

A physician will always consider risk factors and causation when treating a patient with diabetes, heart disease or high blood pressure among many others. When treating a cardiac patient they will consider family history, smoking, weight, cholesterol and CRP levels etc. Proceeding with treatment without information on the biological processes underlying the clinical disease state is educated guessing at best. The likelihood of a successful outcome is lower without considering risk factors and causation.

Proceeding with periodontal treatment without factoring in the underlying biology and the causative bacteria is educated guessing at best. Understanding the patient's risk factors and causative bacteria will help us achieve a favorable treatment outcome and plan in advance how we will address non-responding patients and the maintenance interval.

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