

Are We Missing Out on Anything While Diagnosing Our Patients?

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The late 1800 witnessed various systemic diseases overpowering the general health and well-being of the patients. It was then, that an eminent dental researcher, Willoughby D. Miller, established the important causal role of oral bacteria for dental caries (decay). He asserted through his research work published in *Dental Cosmos*, 1891, "during the last few years the conviction has grown continually stronger, among physicians as well as dentists, that the human mouth, as a gathering-place and incubator of diverse pathogenic germs, performs a significant role in the production of varied disorders of the body, and that if many diseases whose origin is enveloped in mystery could be traced to their source, they would be found to have originated in the oral cavity". This revelation of the human mouth as a 'focus of infection' brought about a paradigm shift in dental treatment strategies [1].

Tooth extraction – removal of decayed tooth was the only line of treatment for any chronic systemic diseases then. Until 1930s, when researchers raised concerned questions for the approach. In an analysis, where 92 out of 200 rheumatoid arthritis patients that were treated with tonsillectomy (with only 15% having history of sore throat) and 52 patients with some or all their teeth extracted, no improvement was observed [2]. Such results from various studies developed a strong disbelief in the proposed theory, However, end to this era of 'focal infection' was published in an editorial in the *Journal of the American Medical Association*, 1952 [3].

The literature is full of evidence in support and against the theory and so is the upheaval of the emerging connections with systemic diseases and oral infections. The individuals suffering from a range of chronic conditions, cancer, infectious human immunodeficiency virus as well as ventilator-associated pneumonia have all recognized oral infections as a problem.

So where did the medicine research go wrong?

What did we ignore?

Where did we lack in our holistic approach?

Where did we go wrong?

Periodontium consist of the supporting and investing structures of the tooth, namely, the root cementum, periodontal ligament, alveolar casing and gingiva. Originating from ecto-mesenchymal

cells, they consist of densely connected blood vessels that are directly or indirectly connected to the entire system. Any inflammatory trigger or response could travel via these connected blood vessels and activate opportunistic complications. The historical 'foci of infection' mainly focused on tooth and insignificant attention towards the periodontium. Whatsoever, today the periodontal medicine has an evidence based literature proving the presence of oral-systemic connections. So what are we missing out on while diagnosing our patients? This is where the 50 years of evolved knowledge of periodontal medicine comes into picture.

The organ system and conditions possibly influenced by periodontal infection are Cardiovascular and Cerebrovascular Systems (Atherosclerosis, Coronary heart disease, Angina, Myocardial infarction, Cerebrovascular accident (stroke), Erectile dysfunction, Anemia), Endocrine System (Metabolic syndrome, Diabetes mellitus), Reproductive System (Preterm and low-birth-weight infants, Preeclampsia), Respiratory System (Chronic obstructive pulmonary disease, Acute bacterial pneumonia), Kidney Diseases (Renal insufficiency, Chronic kidney disease, End-stage kidney disease), Autoimmune Diseases (Rheumatoid arthritis, Ankylosing spondylitis), Cognitive Function (Dementia, Alzheimer disease) and Cancers (Colorectal, Pancreatic, Hepatocellular, Others).

Among the above listed, a few disease with direct causative linkage has been confirmed. Periodontitis is being listed as the 6th complication of Diabetes [4] and a two way relationship also has been confirmed. In a study where samples from both tooth biofilm and atherosclerotic plaque were collected, real time PCR confirmed presence of bacterial involvement in disease progression [5]. This work by researchers impels us to think whether we are treating patient as a whole or missing out on anything.

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