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Combined Medical Problems of Diabetes (DM) and Periodontitis Disease (PD) for Future Adequate Management

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Short Communication

Healthy Congratulations for the inaugural issue of "Sisla Medical Psychiatry & Neurology Journal" [1]. When looking back the long history of medical practice, common diseases have been changed for infectious diseases such as tuberculosis to non-communicable diseases (NCDs) such as diabetes. Nowadays, common medical problems include metabolic syndrome, locomotive syndrome, diseases of psychiatry/neurology, and others. In the light of actual clinical practice, this journal will be expected to contribute much for the development of academic medical world [2].

Across the world, diabetes mellitus (DM) and periodontal disease (PD) have been highly increasing and prevalent [3]. Their combination has been pointed out for years, and PD is now recognized as one of diabetic complications [4]. Actually, several medical and health problems are found in diabetic patients with PD [5]. Then, adequate clinical management for them has been required for internal medicine and dental departments [6]. In this article, the importance of clinical management of PD and DM would be described from several points of view.

Concerning DM and PD, several guidelines were observed so far. One of them was presented by the Consensus report and guidelines on PD and DM [7,8]. It was made in the Perio-Diabetes workshop, that was organized by both of International Diabetes Federation (IDF) and the European Federation of periodontology (EFP). The contents were proposed for physician and dentist. Among them, some adequate items were from the viewpoints of psychiatry, neurology and psychology, such as i) informing the patients of

both links, ii) taking the advantage of screening questionnaire and iii) continuing regular PD monitoring.

This article describes some viewpoints in the following: i) DM, ii) PD, iii) impressive case, iv) patient-oriented medicine.

Firstly, DM has been one of the well-predicted risk factors for PD. Conversely, PD can influence general systemic inflammatory glucose metabolism, insulin resistance and lipid metabolism [9,10]. As DM is chronic metabolic disease, its pathophysiology is either decreased insulin secretion or increased insulin resistance. PD may affect both function of glucose and insulin.

The mutual directional relationship of DM and PD has been recently in discussion across the world [11]. Lots of investigations have showed two-way association between them. From epidemiological evaluation, increased prevalence and incidence of PD has been observed in adults patients with type 2 DM (T2DM) [12]. The decreased value of HbA1c was shown to be significant for effective treatment of T2DM [13]. Further, every 1 % decrease of HbA1c may bring 35% risk reduction of complications, including PD [14].

The relationship among PD, retinopathy and nephropathy was investigated for T2DM patients [15]. Meta-analysis was conducted from 8 articles with 3987 cases. PD was found with overall microvascular complications (OR 1.96). All results revealed that PD was found with retinopathy (OR 3.77) and nephropathy (OR 1.55). In conclusion, PD exist with retinopathy, diabetic nephropathy among T2DM cases and further evaluation will be expected with larger clinical trials.

From mentioned above, adequate treatment for PD can result in the HbA1c reduction. Diabetic patients will have the benefit by receiving periodontal therapy. In the case of hospitalized diabetic case, dental check has to be taken that was not usually conducted routinely [16]. Consequently, any diabetic case will receive routine oral examination and periodontal treatment if needed in also outclinic practice.

Secondly, periodontal pathogens cause cytokine production and oxidative stress which will bring the impaired sensitivity and function of insulin [17]. The treatment of periodontal disease associated with improvement of diabetes control would be beneficial. For recent compared study about these aspects, patients with chronic PD and DM were followed by HbA1c, scaling root planing (SRP) and full-mouth scaling. As a result, significant improvement of HbA1c and periodontal status were found for 3 months [17].

According to recent study, the correlation between glucose variability and PD were investigated for T2DM [18]. The cases were 182 T2DM cases associated with generalized PD. The markers included clinical attachment level (CAL), probing depth (PD), bleeding on probing (BoP), presence of suppuration (SUP), number of remaining teeth, HbA1c and fasting glucose. The results showed that the severity of PD was higher in poor controlled T2DM in comparison with better controlled cases [18].

On the other hand, periodontitis means a chronic

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inflammatory situation of gum around the teeth. It has been observed due to biofilm accumulation from the improper oral hygiene. As regard to the biofilm, it consists of more than 1000 kinds of species of microorganisms. They are involved in the trigger factors and perpetuation of periodontitis such as Tannerella forsythia and Porphyromonas gingivalis [19,20]. Periodontitis may bring to form the pockets between gums and teeth, decreased support of periodontal tissue and bone. It means clinical attachment loss, which may cause teeth mobility and future necessity for removal of the tooth.

Thirdly, Author and collaborators have continued medical practice and research on T2DM, PD and low carbohydrate diet (LCD) for years. Among them, one case was 57-year-old men who suffered from PD, DM, obesity. He was treated by brushing of the teeth, removal of calculus on the gingival margin, extraction of non-storable teeth, temporary splinting under supportive periodontal therapy (SPT) and LCD. He was on super-LCD with 12% of carbohydrate ratio, and showed the reduction of HbA1c and weight reduction for 3 months as 7.8%-5.4% and 100kg-90kg, respectively.

Fourthly, regarding patient-oriented medicine, a recommended proposal may be present concerning the medical and health problem of DM and PD. It is 'Healthy Japan 21' by Japan's Ministry of Health, Labor and Welfare. It includes several important tasks life style-related diseases, such as dental health and DM. As concrete measures, regular medical and dental checkup, cessation of smoking, moderation in drink, self-care, tooth brushing, plaque control and suppression of sugar intake.

In summary, recent trend concerning DM and PD was described. The common pathophysiological situation will be understood broadly by medical staffs and patients. This article would be hopefully a reference for future clinical practice and research.

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