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Cover letter

Date: 06/162022

To,

The Editors

Journal of advance research in biology and pharmacy

Subject: Submission of a Case Report titled "Generalised periodontitis leading to detection of type II diabetes mellitus in a adult"

Dear Sir/Ma'am

We are submitting a Case Report titled "Generalised periodontitis leading to detection of type II diabetes mellitus in a adult"for consideration for publication in Journal of advance research in biology and pharmacy.

Dr.Prakash Baral certify that:

* The manuscript is original work of all authors.

* All authors made a significant contribution to this study.

* This manuscript has not been submitted for publication and has not been published in any other journal.

* All authors have read and approved the final version of the manuscript.

Thank you

Sincerely,

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A case report

Generalised Periodontitis Leading To Detection Of Type II Diabetes Mellitus In a Adult

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ABSTRACT

Inflammation of periodontal structures is called periodontitis.Periodontium comprises of alveolar bone, periodontal ligament, cementum and gingiva. Diabetes mellitus impairs the immune system of body thus periodontium can easily get infected and generalised periodontitis demands the investigation for type II diabetes mellitus.

Key words: Periodontium, Periodontitis, Diabetes mellitus

INTRODUCTION:

The structures around the teeth are collectively called periodontium. The periodontium comprises of four structures namely gingiva, alveolar bone, cementum and periodontal ligament. The alveolar bone is the surrounding bone of root of tooth. The gingiva is the dental scientific term for gum that is soft tissue covering the alveolar bone and neck of tooth. Mostly it is pink in colour with some melanin pigmentation in some individuals The cementum is the outermost hard tissue layer of root of tooth. The root of tooth held in socket of alveolar bone by ligamentous fibrous structure called as periodontal ligament. Thus the joint between the root of teeth and alveolar bone is called “gomphosis”.

There is minimal depth between marginal gingiva and tooth which is called gingival sulcus. In healthy periodontium the gingival sulcus depth measures 2-4 mm.Whenever there is gingival infection, there is overhelming influx of neutrophils into gingiva to fight against invading bacteria which results in pocket formation. The inflammation due to bacterial infection cause redness edematous swelling and pain of gingiva and other parts of peridontium[1].

Diabetes mellitus (DM) is an endocrine disorder where there is decreased secretion of insulin by beta cells of pancreas leading to increased blood sugar level. Periodontal disease is commonly associated with plaque and calculus, however the condition is aggravated with systemic illness like diabetes mellitus.

CASE REPORT:

A 51 year old male patient visited Community Dental Care, Pokhara, Nepal with chief complaints of pain and swelling of gums since 4-5 days. Pain was moderate and constant in nature. He felt unpleasant smell of his breath, some mobility of teeth and noticed that gum bleeds while brushing.

On dental examination there was generalised periodontal diseases in all four quadrants that resulted moderate swelling and bleeding of gingiva as well as second degree mobility of teeth. Periodontal pockets were measured all around the teeth. It measured 5-7 mm at various locations. Inta-oral periapical x-rays (IOPA) were advised that showed generalised alveolar bone loss in all four quadrants.(see figure 1 in legend)

The patient did not mention any systemic illness despite of being asked during history taking. It seems he was asymptomatic and not carrying out routine health check up.

He was advised for hematological(total and differential blood count, hemoglobin, packed cell volume) and blood sugar test.

According to lab report, Random blood sugar(RBS) was 280 mg/100ml. Blood cell counts were within normal range.

Then the patient was referred to endocrinologist for further investigations and treatment of diabetes mellitus. Endocrinologist diagnosed him as type II diabetic mellitus and started needful treatment for same. Dental treatment procedure was also started. He was in periodic follow-up.

Now his blood sugar level is in control with anti-diabetic drugs prescribed by his endocrinologist and periodontal health status has also been much improved.

Thus, sometimes type II diabetes which remain asymptomatic can manifest as dental disease.

DISCUSSION:

Hyperglycemia in diabetes is thought to cause dysfunction of the immune response which fails to control the spread of invading pathogens. Therefore, diabetic subjects are known to more susceptible to infections[2].

Patients with diabetes mellitus have infections more often than those without DM. One of the possible causes of this increased prevalence of infections is defects in immunity. Different disturbances (low complement factor 4, decreased cytokine response after stimulation) in humoral innate immunity have been described in diabetic patients. Concerning cellular innate immunity most studies show decreased functions (chemotaxis, phagocytosis, killing) of diabetic polymorphonuclear cells and diabetic monocytes/macrophages compared to cells of controls. In general, a better regulation of the DM leads to an improvement of these cellular functions. Furthermore, some microorganisms become more virulent in a high glucose environment. Another mechanism which can lead to the increased prevalence of infections in diabetic patients is an increased adherence of microorganisms to diabetic compared to nondiabetic cells. Possibly the carbohydrate composition of the receptor plays a role in this phenomenon[,3,4,5,6].
Inflammation of periodontium is called periodontitis. Clinical features of periodontitis are bleeding and swelling gum, periodontal pocket formation, gingival and periodontal abscess formation, alveolar bone loss causing mobility of tooth/teeth etc.
Diabetics are more susceptible to periodontal diseases and there is increased risk of periodontitis in diabetic patients[7].
Diabetes mellitus enhances the risk of periodontal diseases because there is an increased adherence of microorganism and furthermore, some microorganisms become more virulent in a high glucose environment thus diabetic patients should take care of periodontal health much more than non-diabetics.

Concluding message:

Dentists, when they see generalised periodontal diseases in dental patients, should recommend for blood glucose estimation to rule out diabetes so that non-symptomatic and undiagnosed cases can be diagnosed soon.

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Legend:

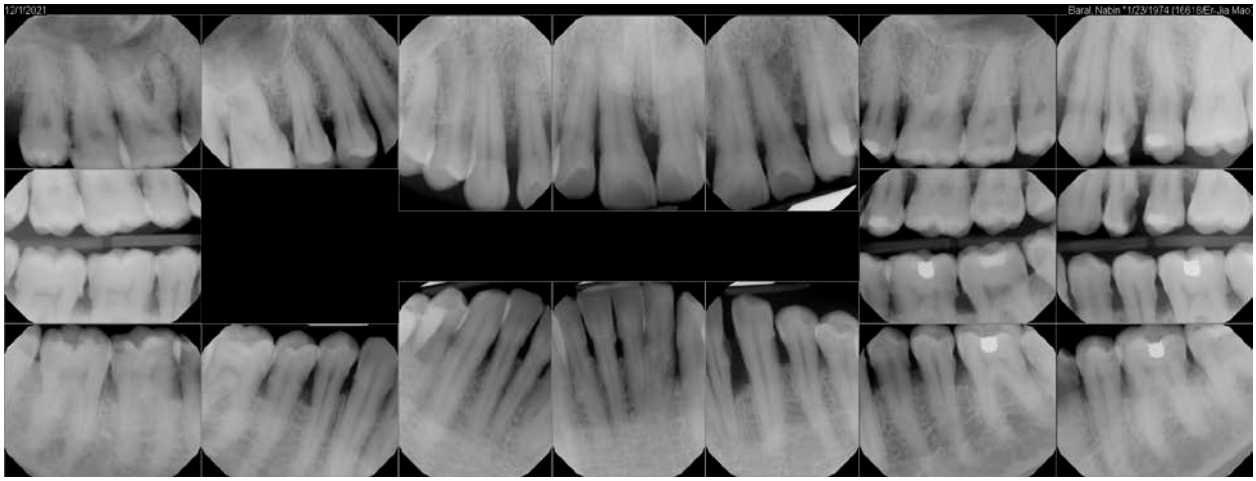

Figure1: Intra-oral periapical x-ray showing the generalised bone loss which is the feature of periodontitis