

Non-surgical Periodontal Management of Gingival Overgrowth in a Patient with Neurocysticercosis: So Common Yet Most Overlooked Aspect

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Abstract

Neurocysticercosis (NCC) is an endemic zoonoses affecting nervous system caused due to the ingestion of *Taenia solium*'s eggs. It is known to be the primary cause of preventable epilepsy which is treated with anti-epileptic drug (AED) therapy and most commonly phenytoin. With the chronic use of phenytoin comes its side effect of gingival overgrowth (GO) side by side. In this case report we have discussed the non-surgical management of the GO as the medical condition of the patient was a relative contraindication for surgical intervention with thorough phase I therapy and drug substitution with levatiracetam. The follow up after 3 months showed marked improvement in patient's condition and encourages dental professionals to rely more and more on such a non-invasive treatment line, wherever feasible, in future.

Keywords: Gingival Overgrowth; Neurocysticercosis; Phenytoin.

Introduction

Neurocysticercosis (NCC) is an endemic zoonoses affecting nervous system caused due to the ingestion of *Taenia solium*'s eggs either via consuming undercooked pork, or contaminated water. *Taenia solium* is the *pork tapeworm* belonging to cyclophyllid cestodes in the family Taeniidae. It is an intestinal zoonotic parasite found throughout the world, and is most prevalent in countries where *pork* is eaten. The adult worm is found in humans and has a flat, ribbon-like body, which is white in color and measures 2 to 3 m in length. The parasite inhabit the brain and spinal cord within nervous system and can lead to severe headache and seizures and number of other pathological features. It is known to be the primary cause of preventable epilepsy in many developing countries with researches showing as much as 29% of epilepsy in endemic regions worldwide being

consistently caused by NCC, [1] affecting 1.7 to 3 million people approximately.

78.8% of patients usually present with clinical features of seizures, 37.9% headaches, 11.7% signs of intracranial hypertension, 7.9% meningitis, 2.8% cranial nerve palsies, 6% gait abnormalities, 16% focal deficits, 5.6% visual changes, and 4.5% altered mental state [2].

Seizures in NCC originate due to known organic focus and hence the primary management line includes anti-epileptic drug (AED) therapy most commonly carbamazepine or phenytoin mainly due to its ease in availability and comparatively affordable costs. Besides this anti-parasitic and corticosteroids are also given in few cases depending upon the stage and condition of patient.

With the chronic use of phenytoin comes its side effect of gingival overgrowth that has been recognized as long back as 1939 by Kimball [3].

Incidences ranging from 3%-93% has been recorded, but about 50% of patients on long-term phenytoin therapy develop gingival enlargement [4].

Gingival enlargement produces difficulties in esthetics and functional demands including pain, tenderness, bleeding from gums, mastication and speech disturbances, pathological migration, malocclusion and further periodontal complications. In this case report we have discussed the non-surgical management and drug substitution as an

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alternative treatment line in GO with medically compromised patients.

Case Presentation

A 48 year old male patient came to out-patient department of Periodontology, King George's Medical University, Lucknow in april of 2017 with the chief complaint of swelling and bleeding from gums since last 6½ -7 years. On taking proper medical history, the patient was a known case of neurocysticercosis since 8 years. His clinical presentation included tonic-clonic seizures, blurred vision due to bilateral optic atrophy, severe headaches, progressive dementia and other cognitive deficits. His medications included tablet phenytoin 300mg 1OD and tablet clobazam 30mg 1OD since last 8 years and were also under psychiatric treatment for his cognitive deficit condition. No significant dental or family history was recorded. On extra-oral examination, face was bilaterally symmetrical and no other anomaly was recorded. Intra-oral examination reflected generalized attrition and abrasion (Figure 1) and



Fig. 1: preoperative facial aspect



Fig. 2: preoperative right lateral aspect

poor oral hygiene. Gingiva was pink in colour with superimposed inflammation showing reddish-pink colour in some regions, blunt end contours, isolated lobulated growth specified in right posterior maxillary and mandibular region (Figure 2) when compared to his left side (Figure 3), coronal position of gingiva in right posterior region (Figure 2) and soft and friable texture. Bleeding on probing was present. On palpation tenderness was elicited from gums. No bone loss was present.

Treatment

Hence diagnosis of drug induced gingival overgrowth with secondary inflammation was made. Treatment plan was made and included proper patient motivation and education, full mouth scaling and root planning and 0.2% chlorhexidine rinses. Patient was kept on frequent recalls. As the medical condition of patient was compromised having a psychiatric disorder, a multidisciplinary approach in collaboration with department of neurology, was planned.

Case discussion with the patient's neurophysician on further treatment plan got us to conclusion to avoid any invasive or surgical intervention. Hence non-surgical management with drug substitution was planned with the physician who then after his assessment, substituted phenytoin with levitracetam 500mg 1BD.

Outcome and Follow-Up

On monthly recall, marked improvement was seen. After 3 months there was regression of inflammatory component, no bleeding on probing was present, and gingival overgrowth was also reduced to appreciable level (Figures 4,5,6). Patient's maintenance was satisfactory.



Fig. 3: preoperative left lateral aspect



Fig. 4: postoperative and after follow up period of 3 months; facial aspect



Fig. 6: postoperative and after follow up period of 3 months; left lateral aspect



Fig. 5: postoperative and after follow up period of 3 months; right lateral aspect

Discussion

The phenytoin-induced gingival overgrowth has multifactorial pathogenesis. The factors of importance in this regard are: drug, plaque and genetics.

Some studies said that there is no association between the severity of the gingival enlargement and dosage strength, duration or its concentrations in serum, saliva or gcf [5,6] and according to some it is directly related to these factors.

Substitution of a known offending drug with another drug of similar action and no such side effect is an effective option but only after consultation with the patient's physician. Cases of drug withdrawal, which is not a practical method in all patients, has shown not only reduction in the size of the gingival overgrowth within a week, but also regression to acceptable levels [7], though according to some no significant improvement is appreciable [8]. However, a wait and watch period of 6-12 months should always be kept

whenever any drug substitution is attempted for the possible resolution lesion and before a decision to implement surgical treatment is made [9]. In our case, significant improvement was appreciable after substituting phenytoin with levatiracetam in a follow up period of 3 months.

The prime motive of nonsurgical approaches is to reduce the inflammatory component in the gingival tissues as according to some investigators, inflammation and plaque accumulation is a prerequisite for development of the enlargement [10,11]. Even in our case it can be pointed out that as patient was right handed, he vigorously brushed his left upper and lower quadrants and hence little GO was appreciable in comparison to his right posterior region.

The presence of the enlargement further makes plaque control difficult, often resulting in a secondary inflammatory process that complicates the gingival overgrowth caused by the drug which was also quite evident in this present case.

On properly complying with oral hygiene instructions and regular professional scaling and root planning, impressive reduction in GO was seen. Hence the need for surgery can be avoided if patient is kept on effective plaque control methods.

When we talk about genetics, It has also been proposed that tendency towards or resistance to phenytoin induced GO is determined by specific fibrogenic response exhibiting genetically predetermined subpopulations of fibroblasts in each individual [12].

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Key Message

1. Proper motivation and education with time to time reinforcement regarding better oral hygiene maintenance can suppress the side effects reducing the need of surgical intervention in number of cases.

2. Consideration to drug substitution after physician's opinion often brings about partial or complete regression of the overgrowth.

3. role of dentist and physician goes hand in hand for proper enlightening and educating patient and his family about his disease, its treatment, side-effects and precautionary measures of prevention from them

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