

Scientific release
from the European
Federation of
Periodontology

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Study:



Management of periodontal disease in patients using calcium channel blockers – gingival overgrowth, prescribed medications, treatment responses and added treatment costs

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Relevant
background
to study:

Gingival overgrowth (GO) is reported to occur in 6.3% to 83% of patients using calcium channel blockers (CCB) for various cardiovascular diseases. CCB-induced GO, characterised by an accumulation of extracellular matrix within the gingival connective tissue, generally begins within the first month of drug administration.

Inflammatory and non-inflammatory aetiologies have been proposed, but specific mechanisms remain poorly understood. Little is known about the management of patients using CCBs and undergoing long-term treatment for periodontal diseases.

Study aims:

To assess the influence of prescribed CCB medications on the frequency and severity of GO, treatment response outcomes, drug substitutions, and extra treatment costs.

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Methods:

All volunteers were diagnosed with chronic periodontitis and used CCBs during their initial periodontal treatment and/or during supportive periodontal therapy (SPT). All patients completed a similar course of initial periodontal treatment, including non-surgical and/or surgical therapies. The extent of GO as well as healing following non-surgical and surgical therapy were used to determine whether CCB cessation or replacement had been effective, when implemented. All patients were included in a supportive periodontal therapy protocol. Retreatment was defined as treatment over and above the prescribed SPT, for cases with pocket

depths ≥ 7 mm with bleeding on probing (BoP) and cases of increasing pocket depth with BoP, determined at three successive visits. Sites with increasing probing depth and/or GO were treated with repeated scaling and root planning or surgery (e.g. gingivectomy, modified Widman flap, laser and/or electro-surgery). Antibiotics were employed in cases of periodontal abscess.

The degrees and extent of gingival overgrowth were used to calculate the average gingival overgrowth index (GOI). The extra costs of retreatment resulting from CCB-induced GO were also calculated.

Results:

The study population comprised 103 patients (55 females, 58 males) who had used CCBs. The average age was 66.5 years (range 42-88) and the average observation time was 11.3 years (range 1-27).

Eighty-nine patients (86.4%) showed GO and 75 of those required treatment for GO. Terminating or replacing CCBs resulted in significant decreases in GO with, respectively, a decrease of the GOI from 3.45 to 1.45 ($p=0.00016$) and from 3.20 to 1.84 ($p=0.00068$). Oral hygiene, drug dosage, and drug combinations had no influence on GO. Surgical treatment was more effective than non-surgical treatment in reducing GO. Fifty-five of the patients needed re-treatment within the observation period. Only two of the 55

patients showed satisfactory healing/reduction of the overgrowth following non-surgical therapy, the others received surgical therapy to treat the overgrowth. On average 3.11 (range 1-8) surgical procedures per patient were carried out. Forty-two patients showed persistent recurrence of the GO during follow-up. The extra cost of re-treatment for this group was 1530€ in 2014 values. The anticipated extra cost per year to control the GO in the future was 490 € (2014 rates).

Patients using CCBs had an average tooth loss of 0.11 per year, which is three times higher than previously reported in non-overgrowth patients from the same practice setting.

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**Limitations,
conclusions
and impact:**

Limitations:

- The retrospective study design and the potential confounding factors do not allow the determination of whether increased tooth loss was a cause-related effect of the prescribed CCB or merely an association.
- Considerable heterogeneity was observed in the treatment approaches and patient management (oral hygiene, need for surgery, and retreatment).
- A major limitation was the lack of a matched control group of patients within this specific study.

Conclusions:

More than 75% of patients with chronic periodontitis and using CCBs needed treatment for GO. Surgical therapies were frequently required, and retreatment over time was usually necessary. Replacing or terminating the CCBs improved the GO, but the overgrowth did not completely resolve, suggesting an irreversible effect from these drugs. Moreover, in many cases, physicians/patients would not or could not change the anti-hypertensive drug regime.

Thus, in a specialist practice, setting the active and supportive therapy for patients using CCBs involves considerable additional treatment, and there is an increased risk of tooth loss and higher costs.

Impact:

Because of the relatively large number of patients using CCBs and the long follow-up after periodontal treatments, this study provides a useful insight for dental clinicians into the management of chronic-periodontitis patients who use CCBs on a daily basis.

In our view as rapporteurs a very important finding was that withdrawal of CCB medication resulted in significant reductions in the GO. Medical side-effects such as GO are best managed medically by drug substitution rather than surgically, wherever feasible.



Fig. 1. Drug-induced gingival overgrowth caused by Cyclosporine and Amlodipine (Calcium Channel Blocker).



Fig. 2. The same patient following surgical reduction and cessation of Amlodipine therapy – 10 years post-therapy.