Cox2-Inhibitors in the Management of Pulpal Pain
–A Review

Dr.Priyadharshini.R¹, Dr.Karthikeyan Murthykumar², Dr.Dhanraj³
CRRI¹,², Professor and Head of the Department³,
Department of Prosthodontics,
Saveetha Dental College and Hospitals,
Pulpal disease occurs due to following causes are (3)

**SEQUELAE OF PULPAL DISEASES:(3)**

- Normal pulp
  - Affected by noxious stimuli causing inflammation
- Reversible pulpitis
- Irreversible pulpitis
  - Chronic hyperplastic pulpitis
  - Symptomatic irreversible pulpitis
  - Asymptomatic irreversible pulpitis
  - Internal resorption
- Ischemia induced by traumatic injuries
- Pulpal necrosis
CLASSIFICATION OF PULPAL DISEASE: (GROSSMAN’S CLASSIFICATION): (3)
**COX-2 INHIBITORS:**

Selective COX-2 inhibitors are a type of non-steroidal anti-inflammatory drug (NSAID) that directly targets cyclooxygenase-2, COX-2, an enzyme responsible for inflammation and pain. Targeting selectivity for COX-2 reduces the risk of peptic ulceration, and is the main feature of celecoxib, rofecoxib and other members of this drug class.

Agents such as non-steroidal anti-inflammatory drugs (NSAIDs), cyclooxygenase (COX)-2–selective inhibitors, and opioids are available for the treatment of acute pain. Patients with acute dental pain often require analgesic therapy for a short period of time, usually 2 to 4 days. Non-selective NSAIDs deliver anti-inflammatory and analgesic effects through inhibition of the COX-1 and COX-2 isozymes. After long-term use, non-selective NSAIDs increase the risk of developing peptic ulcer disease, GI bleeding and renal toxicity. The primary purported safety advantages of COX-2 inhibitors over non-selective NSAIDs are related to their theoretical lack of associated gastropathy. It is well established that non-selective NSAIDs impair platelet function by blocking thromboxane A2 biosynthesis. NSAIDs also block the synthesis of prostacyclin, but the net effect of these events is a relatively weak inhibition of platelet function in the great majority of patients. Studies of COX-2–selective inhibitors such as rofecoxib and celecoxib have demonstrated efficacy in the treatment of acute pain. The analgesic benefit of these agents within the therapeutic range is attributable mainly to their inhibition of COX-2 without affecting COX-1. As high as 80% of referral patients with preoperative pain, experience pain after endodontic treatment. About one-fifth of patients report moderate to severe pain after endodontic therapies. Etoricoxib is a methylsulfyl second generation coxib. It has a considerable half-life of 22 hours with remarkable COX2/COX1 inhibition ratio of 106 as compared to 7, 1.78, 3.12 and 1.78 for celecoxib, ibuprofen, aspirin and indomethacin, respectively. It is a good substitute for intolerant patients to non-selective NSAIDs with long lasting duration, comparable renal effects and the lower chance of gastrointestinal upset; hence it may be an acceptable alternative for whom ibuprofen is contraindicated. A few studies exist in the literature which assessed the analgesic effect of etoricoxib for pulpal pain.
CLASSIFICATION OF NSAIDS:(20)
Management of pulpal pain:
There are various methods to manage the pulpal pain based on the following causes of pulpal pain. They are
1) In case of pulpal pain due to trauma or iatrogenic dental procedures, pathological wear, the treatment choice is root canal treatment only.
2) Pulpal pain due to dentin hypersensitivity then management is seal the dentin all tubules using restorative materials.
3) The most common management of pulpal pain is analgesic. Then followed by endodontic treatment.
4) The most effective analgesic to control the pulpal pain are COX-2 inhibitors because it has high potential to control pain without disturb any pathway and mainly inhibit the cox2 enzyme only so it as minimal side effects like peptic ulcer, GI bleeding, etc.
5) Selective COX-2 Inhibitors has only affecting the cox-2 without affecting the cox-1 function, some highly selective COX-2 inhibitors have been introduced over the past decade. They cause little gastric mucosal damage, occurrence of peptic ulcer & ulcer bleeds is clearly lower than with traditional NSAIDs. They do not depress TXA2 production by platelets & do not inhibit platelet aggregation or prolong the bleeding time, but it reduce PGI2 production by vascular endothelium. Currently selective COX-2 inhibitors are called as COXIBS. It has three selective COX-2 inhibitors are celecoxib, etricoxib, & parecoxib are available in India. It has been concluded that selective COX-2 inhibitors are effective management of pulpal pain & highly used only in patients with high risk of peptic ulcers, perforation or bleeds. If it is selected should be administered in the lowest dose for shortest period of time. And it should be avoided in patients with history of cardiac diseases, and there is no clear evidence as yet that etricoxib & lumaricoxib also increases CV risk. (21-24).
CONCLUSION:
Non-selective NSAIDs impair platelet function by blocking thromboxane A2 biosynthesis. Non-selective NSAIDs also block the synthesis of prostacyclin, but the net effect of these events is a relatively weak inhibition of platelet function in the great majority of patients. Studies of COX-2-selective inhibitors such as rofecoxib and celecoxib have demonstrated efficacy in the treatment of acute pain. The analgesic benefit of these agents within the therapeutic range is attributable mainly to their inhibition of COX-2 without affecting COX-1. As high as 80% of referral patients with preoperative pain, experience pain after endodontic treatment. SO The effect of selective COX-2 inhibitors are good for management of pulpal pain in various conditions. Many studies are demonstrated the effects of selective COX-2 inhibitors for management of pulpal pain & also minimal dosage only given to the patients so that minimal adverse effects & act as a good analgesics.

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