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THE EDITOR'S CORNER

Take Two Aspirin and Call Me in the Morning

A while back I accepted a transfer from a colleague who was treating the patient with four-first-bicuspid extraction therapy for the correction of a Class II bimaxillary protrusion, complicated by a pronounced arch-length discrepancy. By the time I saw the patient, the arch-length discrepancy had been resolved somewhat, but sizable extraction spaces still existed. The patient had been in treatment for two years, and I felt I could close the spaces within six to eight months and bring the treatment to a successful conclusion. Six months and one year later, I was still trying unsuccessfully to close those spaces. During that period, I used every space-closing scheme in my usual repertoire, plus some I had only read about. I used light forces, medium forces, and heavy forces—all to no avail.

The patient had immaculate oral hygiene, and the gingiva was completely healthy. The extraction spaces were robust and had never taken on the hourglass appearance that so often presages space-closure problems. For all of my care and strategy, the progress of this patient had to be measured in 10ths of millimeters. Fortunately, the patient seemed understanding; he never expressed any disgust or impatience with my limited therapeutic powers, and *he never had any pain*.

One day he asked me if I could write him a prescription for Motrin 800. I told him I could and asked him how many he needed. He said, "Six hundred." I repeated, "Six hundred! Why on earth so many?" He then told me how he suffered from severe arthritis, and unless he took eight to 10 Motrin a day, he couldn't control his pain or mobility enough to function. I advised him to consult his physician about the dosage of medication, but the conversation rustled some papers in my mental trash bin. I went back to a paper I had done for JCO (August 1984) on the role of non-steroidal anti-inflammatory agents (NSAIDs) and the perception of pain by orthodontic patients. The answer to my therapeutic dilemma lay right there in the bibliography.

Trauma generates the release of substances known

as prostaglandins, which are responsible for the cardinal features of inflammation: pain, redness, heat, and swelling. NSAIA's such as aspirin, ibuprofen, indomethacin, and phenylbutazone interrupt the production of prostaglandins by blocking the enzyme cyclo-oxygenase (COX) and thus reducing the inflammation that occurs when prostaglandins are abundant.

Prostaglandins greatly enhance the transmission of painful stimuli by biochemically mediating the amount of cyclic adenosine monophosphate (AMP), which modulates norepinephrine at the neural synapses. The ability of prostaglandins to cause hyperalgesia accounts for their major role in producing pain within inflamed tissue and in causing ordinary, non-noxious stimuli to become painful.

When archwires are tightened, the periodontal membrane surrounding the teeth is stressed, and the periodontal capillaries are compressed. This causes a stagnation of blood, which subsequently produces prostaglandins. Chewing on a soft plastic wafer or gum can prevent the blood from stagnating and lessen the post-adjustment discomfort of most orthodontic patients.

Prostaglandins are not isolated in the prostate gland, as researchers originally thought when they found these metabolites in the prostate glands of sheep. They are active in just about every human physiological system, and they do far more than cause inflammation and augment nociceptive impulses. Among other functions, they relax smooth muscle, regulate blood pressure by increasing urinary output, cause vasoconstriction and vasodilation, and—important for orthodontists, oral surgeons, and orthopedists—control bone metabolism and shut down osteoclastic activity, even when taken in modest amounts. Their necessity in ordinary physiological systems accounts for the many unwanted side effects that occur when prostaglandin production is disrupted by NSAIA's: gastric upset, ringing in the ears, interruption of osseous metabolism, and dizziness, to name a few.

My therapeutic ignorance came from

knowing something intellectually but not understanding it experientially. Until the concept slapped me hard in the face, I had been unable to make the connection between the reluctance of teeth and bone to behave normally and a patient's ingestion of over-the-counter analgesics. Since that experience, I have been more conscious of this problem, and have found that it seems to occur much more frequently than I ever believed possible.

I find the phenomenon far more often in adults, because they are more likely to self-medicate, but it also happens in children. I vividly recall an incident involving an adolescent transfer patient. (Why is it always the transfer patients who teach us so much?) One day the mother of this uncooperative, dirty-mouthed, insolent youngster came in to complain about my lack of progress, expertise, and *savoir-faire*. While she was nailing my hide to the wall, she mentioned that her precious darling had some medical problems that required my sympathy and understanding, along with the ingestion of six to eight Motrin a day. Ah-ha!

Patients often feel that NSAIA's are so common and innocuous that they need not be mentioned on their medical histories. Orthodontists would do well to carefully examine the medication experience of their patients and specifically warn them about the consequences of taking these simple but potent pain remedies. We should probably be placing as much emphasis on this as we do on the other dos and don'ts in our patient instructions.

If you experience episodes like mine, you might want to question your patients about the medications they routinely take. Unfortunately, acceptable alternative remedies are limited at the moment, and cooperation with patients' physicians is mandatory. Next month in this column, I will bring you up to date on some exciting research that promises to revolutionize anti-inflammatory and pain therapies in the near future.

LWW