Alternating Doses of Ibuprofen and Acetaminophen Provided an Effective Treatment for Pain Relief After Tonsillectomy in Children

Alternating doses of ibuprofen and acetaminophen provided an effective treatment for post-tonsillectomy pain in the majority of children and did not increase rate of bleeding. The new finding appear in *Annals of Otology, Rhinology & Laryngology*. Pain control after tonsillectomy in children is critical for a good quality of postoperative recovery. Opioids, acetaminophen and non steroidal anti-inflammatory drugs (NSAIDs) are commonly used for pain management following tonsillectomy in the pediatric population. While opioids are effective in controlling postoperative pain, opioids’ adverse effects such as sedation, respiratory depression, nausea, emesis, pruritus, and constipation limit their use. Moreover, the use of codeine, an opioid analgesic, was associated with fatality after tonsillectomy in children with obstructive sleep apnea. Consequently, the US Food and Drug Administration and European Medicines Agency issued a contraindication on codeine use in children undergoing tonsillectomy and/or adenoidectomy. A variety of NSAIDs has been shown to be effective for post-tonsillectomy analgesia by reducing or eliminating the need for opioids. Concerns for increased bleeding rate made practitioners reluctant to use NSAIDs in patients undergoing surgery. The American Academy of Otolaryngology-Head and Neck Surgery clinical practice guideline regarding tonsillectomy included ibuprofen as an option for pain management. Recently, ibuprofen with acetaminophen was suggested as a safe alternative to codeine with acetaminophen. The aims of the present study were to determine the outcomes of alternating doses of ibuprofen and acetaminophen in treatment of post tonsillectomy pain in children and to identify characteristics of children who had inadequate pain control. In this Study, the medical records of children who received alternating doses of ibuprofen and acetaminophen for post tonsillectomy pain between August 2012 and November 2013 at a tertiary care children’s hospital were reviewed. Incidences of postoperative bleeding and unresolved pain were determined. A total of 583 patients (304 males, 279 females, age range =1-18 years) had received alternating doses of ibuprofen and acetaminophen after tonsillectomy and adenoidectomy. Of the 583 patients, 56 (9.6%) reported inadequate pain control. Age, sex, obesity, presence of comorbid conditions, indications for surgery, and concurrent surgical procedures were not different between children who had adequate analgesia and children who had unresolved pain. Twenty-four patients (4.1%) had postoperative bleeding. Nine patients (1.5%) required surgical intervention for bleeding. The results of this study have been accepted for presentation at the American Society of Pediatric Otolaryngology, April 22-26, 2015, Boston, Massachusetts. So, children taking alternating doses of ibuprofen and acetaminophen provided an effective control of post-tonsillectomy pain in the majority of children and did not increase the rate of bleeding. Sex, obesity, indications for surgery, and concurrent surgical procedures did not affect the need for additional analgesic.

A new study published in the *Journal of Gastrointestinal Surgery* April issue 2016 shows using IV acetaminophen for postoperative pain management produced notable indirect cost savings and reduced ED(Emergency Department) visits in the first 30 days postoperatively, with good safety and tolerance. Postoperative pain control in bariatric surgery is challenging, despite use of intravenous (IV) narcotics. Intravenous acetaminophen is one pain control alternative. A double-blind, prospective, randomized trial was conducted in a single accredited bariatric center to investigate the economic impact of IV acetaminophen in bariatric surgery and its effect on patients’ pain, satisfaction, and length of hospital stay. In this study, Group 1 (treatment group) received IV acetaminophen plus IV narcotics 30 min before surgery, then medication plus IV narcotics/PO narcotics for the remaining 18 h. Group 2 (control) received IV normal saline plus IV/PO narcotics. Patients underwent laparoscopic Roux-en-Y gastric bypass (LRYGB) or laparoscopic sleeve gastrectomy (SG). Primary outcomes included direct hospital costs, length of hospital stay, postoperative pain, and patient satisfaction. Secondary outcomes included indirect costs, rescue narcotics dosage, and 30-day outcomes. Mean direct hospital cost in the treatment group (n = 50) was $3089.18 vs $2991.62 for the control group (n = 50) (p < 0.05). Pain scores did not differ significantly (p = 0.61). After adjusting for surgery type, there was no significant difference in length of stay (p = 0.95). Significantly more control group patients incurred surgery-related indirect costs (10% vs 2%, p < 0.05), with greater presentation to the emergency department for abdominal pain (5/50 vs 1/50), yielding higher total indirect costs ($39,293 vs $13,185). So, patients using IV acetaminophen for postoperative pain management produced notable indirect cost savings and reduced ED visits in the first 30 days postoperatively, with good safety and tolerance.
More and more people, particularly older people, are suffering from osteoarthritis due to wear and tear on their joints. This primarily affects the knee and hip joints but also the spine. In earlier studies, scientists at MedUni Vienna Department of Orthopaedics showed that raised levels of certain proteins, so-called galectins, and their docking sites are found in patients with osteoarthritis. However, until now, their role in osteoarthritis was largely unknown. In a study that was recently published in the Journal of Immunology, MedUni Vienna researchers managed to identify the function of galectin-1 for the first time worldwide and established that the carbohydrate-binding protein controls inflammation in the affected cartilage. This outstanding study was also featured as a “Research Highlight” in the leading journal Nature Reviews Rheumatology. For the very first time their study showed that galectin-1 triggers inflammation rather than the inflammation triggering secretion of this protein. Glycobiology looks at the biological relevance of carbohydrate chains for the many different types of cell in the human body. Galectin-1 is an example of a carbohydrate-binding protein in humans. In osteoarthritis, this protein is over-expressed in the joint cartilage – and the worse the degeneration of the joint, the more it is secreted. Galectin-1 promotes inflammation by triggering the release of inflammatory factors via the NF-kB signalling pathway, which in turn contributes to destruction of the joint. The glycobiologists at MedUni Vienna are already conducting further research to find out whether galectin-1 could be used in future as a target for preventive treatments or even as a possible biomarker for osteoarthritis.

Researchers have created patient-specific, in vitro models of an extreme pain disorder using neurons generated from the patients’ stem cells. The researchers used the induced pluripotent stem cell (iPSC)-derived neurons to test an experimental drug, which relieved pain attacks in some patients. The findings highlight how an iPSC disease model could help screen drugs for individual patients, bridging the gap between pre-clinical and clinical research that has hampered the development of new pain medications. Lishuang Cao and colleagues exploited iPSC technology to produce sensory neurons using blood from four IEM patients, who carried different genetic mutations in the sodium channel. These iPSC-derived neurons showed abnormally high excitability and sensitivity to heat, closely resembling features of the disease. Testing the selective voltage gated sodium (Na 1.7) channels blocker, the researchers found that it reduced the spontaneous firing of these neurons in vitro. In parallel, a single dose of the drug helped curb heat-induced pain attacks in most of the patients. Researchers say that iPSC-based disease models may offer a personalized approach for identifying drugs to treat IEM and other pain disorders.

Safest analgesic as maintenance therapy for Moderate Arthritis Pain

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There is strong evidence showing that individuals who experienced chronic pain during childhood have chronic pain as adults, but few studies have evaluated the characteristics of pain that persists from childhood through adult years. Researchers from the University of Michigan found that one in six adult pain patients had pain as children or adolescents, and their pain was widespread and neuropathic with psychological comorbidities and decreased function. The findings were reported in The Journal of Pain, a publication of the American Pain Society. For the study, more than 1,000 patients 18 years and older were evaluated and asked about pain, family history, physical and psychological limitations and treatment history. They also were asked about childhood pain. The authors hypothesized that adult patients who reported having pain in childhood are more likely to experience pain of greater severity that is neuropathic in nature and meets clinical criteria for a diagnosis of fibromyalgia. Results showed that one in six new adult pain patients said they had a history of chronic pain in childhood and they were predominantly young females. Their pain tended to be more widespread, and neuropathic, likely fibromyalgia, in contrast with subjects who denied having childhood pain. Patients who experienced childhood pain also showed higher levels of anxiety and worse functional status.

One of the most common neurodevelopmental disorders of childhood, attention deficit hyperactivity disorder (ADHD) is typically treated with behavioral therapy and medication. But a new study reveals a link between decreased bone density and such medications, prompting researchers to warn physicians of the potential threat these drugs can pose to kids’ developing bones. The results of the study - which was led by Dr. Jessica Rivera, an orthopaedic surgeon with the US Army Institute of Surgical Research - were presented at the 2016 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS). According to the Centers for Disease Control and Prevention (CDC), an estimated 6.4 million children were diagnosed with (ADHD) through 2011. Children with ADHD have trouble with focus and behavior, and do not grow out of it, as most children do. Symptoms of ADHD include daydreaming, forgetting things, squirming or fidgeting, talking excessively, making careless mistakes and having trouble getting along with others. To investigate how ADHD medications could impact bone health, the researchers assessed 5,315 children in the CDC’s National Health and Nutrition Examination Survey (NHANES) and compared children who were taking ADHD medications with children who were not. Results show that the children who took ADHD medication had lower bone mineral density in the femur, femoral neck and lumbar spine, compared with the children who were not on medication. Medical News Today recently reported on a study that suggested, in an effort to reduce the high prevalence of osteoporosis in the population, taking vitamin D supplements in pregnancy benefits winter babies, as it can affect long-term skeletal growth and peak bone mass.

Among adults with chronic low back pain, both mindfulness-based stress reduction and cognitive behavioral therapy resulted in greater improvement in back pain and functional limitations when compared with usual care, according to a study appearing in the March 22/29 issue of JAMA. Low back pain is a leading cause of disability in the United States. There is need for treatments with demonstrated effectiveness that are low risk and have potential for widespread availability. Mindfulness-based stress reduction (MBSR) focuses on increasing awareness and acceptance of moment-to-moment experiences including physical discomfort and difficult emotions. Only one large randomized clinical trial has evaluated MBSR for chronic low back pain, and that trial was limited to older adults. Daniel C. Cherkin, Ph.D., of Group Health Research Institute, Seattle, and colleagues randomly assigned 342 adults age 20 to 70 years with chronic low back pain to receive MBSR (n = 116), cognitive behavioral therapy (CBT; n = 113), or usual care (n = 113). Cognitive behavioral therapy (training to change pain-related thoughts and behaviors) and MBSR (training in mindfulness meditation and yoga) were delivered in 8 weekly 2-hour sessions. The authors pointed out. These findings suggest that MBSR may be an effective treatment option for patients with chronic low back pain.
Metformin: Potential Analgesic?

Chronic pain is a worldwide issue affecting nearly 1.5 billion people, of those, 3-4.5% suffers from neuropathic pain. In perspective, chronic pain in the United States is nearly four times as common as diabetes mellitus and is associated with major personal and societal burden. Recent literature has explored metformin as an option in pain management, given its role in the AMP-activated protein kinase (AMPK) pathway and its ability to modulate pain in animal models. Studies have shown that AMPK may play a role in the pain mechanism pathway. Tilia et al. has observed that when AMPK is activated, the development of persistent nociceptive sensitization is blocked in incision induced pain in mice models. Additionally, AMPK activation has been shown to decrease neuropathic pain, and incision induced acute and chronic pain in mice models via inhibition of the extracellular signal regulated kinase pathway, resulting in reduced activity of the peripheral nervous system’s nociceptors. Given the proposed anti-nociceptive action of AMPK on the peripheral nociceptors in animal models, it would be of interest to determine if AMPK activation is associated with reduced pain severity in human studies. Metformin, a well-established medication for diabetes, has been shown to activate AMPK. By inhibiting mammalian target of rapamycin (mTOR) pathway in nociceptors, metformin has been shown to reduce mechanical allodynia and nociceptor excitability. Given the effect of metformin on AMPK in sensory neurons that result in decrease nociception, their research objective was to determine the association of self-report use of metformin and pain intensity. In this cross-sectional study, they hypothesized that diabetic patients on metformin would report lower average pain scores compared with those who were not on metformin. A total of 329 men and women, aged 18–65, completed a phone-based survey. They utilized the Brief Pain Inventory to assess for pain intensity ratings; Leeds Assessment of Neuropathic Symptoms and Signs to screen for neuropathy; and the Personal Health Questionnaire (PHQ8) Depression Scale to assess for depression. Three hundred and twenty users, 167 nonusers. Compared with non-users, metformin users were used more often [38% vs 20%, P = 0.001]; had lower mean depression scores [6.8 vs 8.3, P = 0.026] and fewer comorbidities [1.5 vs 1.8, P = 0.022]. Adjusting for these three variables, pain scores were not significantly different between groups. In a subset analyses of those with neuropathic pain, there were no differences in pain scores found between groups. In a clinic sample of patients with diabetes, the use of metformin at an average dose of 1,432 mg was not associated with lower pain scores. Given the anti-nociceptive effects of metformin in the animal models of pain, and the relative safety of metformin, future research should evaluate the effect of the higher dose of metformin as a potential analgesic.

New Target for Reducing Nerve Pain

A specific molecule involved in maintaining pain after a nerve injury has been identified and blocked in mice by Hiroshima University researchers. These results reveal a promising therapeutic strategy for treating neuropathic pain. Mice with an injury to their sciatic nerve showed less pain after multiple injections of a drug that blocks the activity of a molecule called high-mobility group box-1 (HMGB1). Researchers also discovered that a single dose of a drug to block the activity of a different molecule, called matrix metalloprotease-9 (MMP-9), could also alleviate pain from the injury. The chemical pathways that these drugs use to inhibit HMGB1 or MMP-9 are different from common pain relievers, like opioids (Morphine) or acetaminophen. Therefore, the potential for addiction or negative side-effects may be reduced. The results reveal that the drug to block HMGB1, called anti-HMGB1, has the downstream effect of preventing the increase of MMP-9 that would normally be expected when HMGB1 increases. Therefore, an inhibitor of MMP-9 may be a more direct route to produce the same effect. This is the first study to link HMGB1 and MMP-9 together in the cellular process of maintaining pain. A research team led by Professor Yoshihiro Nakata, PhD, at Hiroshima University’s Institute of Biomedical and Health Sciences began their investigation of sciatic nerve pain as part of their long term studies of the central nervous system. Sciatic nerve pain, or sciatica, causes pain in the lower back, buttocks, or back of the leg and is often caused by a herniated disc in the spine or a pinched nerve. Similar pain can occur in different nerves in patients with cancer or diabetic neuropathy. Prof. Nakata’s team demonstrates a pain-relieving effect from injecting anti-HMGB1 into the hip in the slightly broader area around the nerve, called a perineural injection, avoiding the complications of other injection methods. A localized injection also avoids the potential side-effects of delivering the drug through larger body systems, like a pill into the digestive system or an injection into the blood. Blocking HMGB1 lessened pain with no negative impact on healing. Selectively blocking MMP-9 also relieved pain with no obvious changes to the activity of other molecules responding to the injury. The results of this Hiroshima University study show promise for relieving nerve pain with a chemically specific approach that is convenient for patients.