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MULTIMODAL POST-OPERATIVE PAIN MANAGEMENT

ANNOTATION

The article deals with pathogenesis of post-operative pain. Basic principles of medication of post-operative pain syndrome are laid down. Unique method, application of non-narcotic analgesic in combination with anti-spastic drug as preventive analgesia, is developed and implemented. The evidences of efficiency of the method are presented.

Key words: post-operative pain, stress reaction, post-operative analgesia, non-opioid analgesic, anti-spastic drug.

Currently, one of the most urgent issues of postoperative period is a need in more effective analgesic methods.

Surgical trauma and accompanying pain is a trigger of stress reaction. Being a powerful stimulator of the autonomic nervous system, pain indirectly affects the functions of various organs and systems. The stress of these systems, first of all, blood circulation and breathing ones, is exhibited as increased blood pressure, tachycardia, heart rhythm disorder, etc. The final link of all these reactions is peripheral blood circulation, which, if affected, may null and void all the work of a surgeon.

Another clinical signs include reduced motion activity, 'forced attitude', inability to expectorate and breathe deeply.

A deeper research of pathological physiology of post-operative period revealed that initial belief in adaptation wisdom of organism when its stress reaction to a trauma was considered as a compensation mechanism required for survival was replaced by the concept of necessity to suppress stress response as much as possible. Thus, one can conclude that adequate analgesia may and must improve the outcome of surgical treatment.

The conventional narcotic-based analgesic method blocks central mechanisms of pain syndrome, but does not eliminate the cause, and has a lot of undesired side effects. Over the last decades, more attention has been paid to the study of peripheral mechanisms of pain origination and management. The latest concept of origination of

pain syndrome and its effects for organism in general is shown below.

When tissues are affected with a large trauma, the mediators exuded at the place of damage (serotonin, cytokines, leukotrienes, prostaglandins) stimulate multimodal nociceptors, which again increases the exudation of mediators, thereby, reducing pain threshold (initial hyperalgesia). Local edema of tissues due to inadequate penetrability of capillaries caused by histamine and bradykinin aggravates the situation.

A local inflammatory process is the cause of system response to damage, i.e. a number of mediator systems are activated (kinin, complement system, lipid mediators and cytokines).

Thus, for organism, the pronounced inflammatory response is of destructive rather than protective nature. The first two days of post-operative period are critical for forecast of outcome of surgical treatment, and require accurate selection of method and quality of post-operative analgesia.

Based on the above concept of peripheral origination of pain, modern schemes of prevention and treatment of post-operative pain syndrome are formed. From the viewpoint of pathogenesis, the use of peripheral action analgesics from the range of non-steroid anti-inflammatory drugs (NSAID) is justified because they inhibit pain mediators and inflammatory modulators. Efficiency of aprotinin preparations, which inhibit synthesis of bradykinin, was proved as well.

It is well known and very important that pain caused by surgical damage of tissues is accom-

panied by the spasm of unstriated muscles. The origination of the spasm is quite complicated, however, modern literature pays little attention to the interrelation when considering pain pathogenesis.

It is also undisputable that spasm gives rise to or increases pain. It is also interesting to note that the connection between pain and spasm is limited at the level of spinal cord, and is not controlled by brain. A vicious circle is formed to support pain impulsing, which aggravates the course of post-operative period.

Based on the above conception, it is logical that narcotics are not always effective for management of spastic pains, instead, we just reduce the perception of pain due to central sedative effect, but, it does not eliminate the spasm itself. On the one hand, the sedation is useful. However, it is a downside of use of narcotics in post-operative period when early activation of patients is required to prevent complications. Another downside is suppression of breathing, and gastrointestinal functions.

By applying NSAID, such as peripheral analgesic, we reduce pain impulsing, and inhibit humoral factors of pain, but do not eliminate the spasm itself. Possibly, it is the cause of low efficiency of NSAIDs after gastrointestinal surgeries where the spasm of unstriated muscles plays important role in generation of pain.

By using the multimodal principle, Chair of Anesthesiology and Resuscitation Science of ASM-RI theoretically substantiated the use of a combination of NSAIDs and musculotropic anti-spastic drug (No-Spa) in post-operative period (2006).

Modern concepts of post-operative analgesia are determined by the wish to avoid the usage of narcotics as much as possible. Based on the above, it was proposed that the combination of drugs would allow to use narcotics less often, and to achieve the same analgesic efficiency by using NSAIDs.

By considering the issue of post-operative analgesia, the following main principles of modern approaches to resolving the issue were established:

— Maximized restriction of use of narcotic analgesics and their analogues, only when necessary or other analgesia methods are inadequate.

— Wide use of modern NSAIDs having effective impact on various components of pain syndrome. In case of proper and short-term use, the risk of development of gastrointestinal complications is very low.

— Versatile post-operative analgesia, i.e. use of a few drugs influencing various components of pain syndrome.

— Preventive analgesia, i.e. prevention of pain by injecting preparations before pain syndrome is developed, by hours.

The said concept was implemented as follows:

During surgery, humoral factor inhibitors are injected (for example, Contrycal 50,000 IU).

— Immediately after surgery and before patient wakes up, NSAID and No-Spa (basic analgesic therapy) are injected. Then, the pair is injected every 6 to 8 hours whether pain is present or not. How often the preparations must be injected depends on specific NSAID used, i.e. its daily allowed dosage.

— Narcotic analgesics (Promedol, Stadol, etc.) are injected only at request, when basic analgesic therapy is ineffective.

In practice, the offered scheme of post-operative analgesia showed high efficiency in oncology surgery. At sufficient level of analgesia, the consumption of narcotic analgesics for non-abdominal surgeries decreased by 76 %, and for less-traumatic abdominal surgeries it decreased by 69 %, and for large traumatic surgeries on stomach and esophagus it decreased by 62 %.

АННОТАЦИЯ

В статье рассмотрен патогенез послеоперационной боли. Сформулированы основные принципы медикаментозной терапии болевого синдрома после операции. Разработан и внедрен в практику собственный метод - применение ненаркотического анагетика вместе с спазмолитиком в режиме превентивной аналгезии. Представлены данные об эффективности метода.

Ключевые слова: послеоперационная боль, стресс-реакция, послеоперационное обезболивание, ненаркотический анагетик, спазмолитик.

ТҮЙІН

Мақалада ота жасалғаннан кейінгі ауырсынудың патогенезі қарастырылған. Ота жасалғаннан кейінгі ауырсыну синдромын дәрі-дәрмекпен емдеудің негізгі қағидаттары жинақталған.

Практикаға өзінің жеке әдісі - сақтандыратын аналгезия режимінде спазмолитикпен бірге есірткілік емес анагетикті қолдану әзірленген және енгізілген. Осы әдістің тиімділігі туралы мәліметтер берілген.

Түйін сөздер: ота жасалғаннан кейінгі ауырсыну, стресс-реакция, ота жасалғаннан кейінгі ауырсынуды басу, есірткілік емес анагетик, спазмолитик.