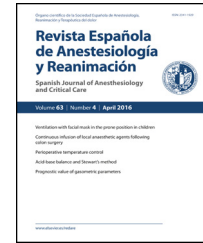




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ORIGINAL ARTICLE

Pain locations in the postoperative period after cardiac surgery: Chronology of pain and response to treatment[☆]

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KEYWORDS

Postoperative pain;
Cardiac surgery;
Sternotomy;
Pain at rest;
Dynamic pain

Abstract

Introduction: Postoperative pain after cardiac surgery (CS) can be generated at several foci besides the sternotomy.

Methods: Prospective descriptive longitudinal study on the chronological evolution of pain in 11 sites after CS including consecutive patients submitted to elective CS through sternotomy. The primary endpoints were to establish the main origins of pain, and to describe its chronological evolution during the first postoperative week. Secondary endpoints were to describe pain characteristics in the sternotomy area and to correlate pain intensity with other variables. Numerical Pain Rating Scale from 0 to 10 at rest and at movement on postoperative days 1, 2, 4 and 6. Numerical Pain Rating Scale > 3 was considered moderate pain. Statistical analysis consisted in Mann-Whitney *U*-test, a Chi-squared, a Fisher exact test and Pearson's correlations.

Results: Forty-seven patients were enrolled. In 4 of 11 locations pain was reported as Numerical Pain Rating Scale > 3 (sternotomy, oropharynx, saphenectomy and musculoskeletal pain in the back and shoulders). Maximum intensity of pain on postoperative days 1 and 2 was reported in the sternotomy area, while on postoperative days 4 and 6 it was reported at the saphenectomy. Pain at rest and at movement differed considerably in the sternotomy, saphenectomy and oropharynx. Pain at back and shoulders and at central venous catheter entry were not influenced by movement. Pain in the sternotomy was mainly described as oppressive. Patients with arthrosis and younger patients presented higher intensity of pain ($p=0.004$; $p=0.049$, respectively).

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PALABRAS CLAVE

Dolor postoperatorio;
Cirugía cardíaca;
Esternotomía;
Dolor en reposo;
Dolor dinámico

Conclusions: Four locations were identified as the main sources of pain after CS: sternotomy, oropharynx, saphenectomy, and back and shoulders. Pain in different focuses presented differences in chronologic evolution and was differently influenced by movement.

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Localizaciones del dolor en el postoperatorio de cirugía cardíaca: cronología del dolor y respuesta al tratamiento

Resumen

Introducción: Tras la cirugía cardíaca (CC) el dolor postoperatorio procede de varios focos, además de la esternotomía.

Métodos: Estudio prospectivo, descriptivo y longitudinal sobre la evolución cronológica del dolor en 11 localizaciones tras CC. Se incluyeron pacientes operados consecutivamente de CC por esternotomía. Los objetivos fueron establecer los principales focos del dolor, su evolución cronológica durante la primera semana, correlacionar la intensidad del dolor con otras variables y describir las características del dolor de la esternotomía. Se utilizó la escala de valoración numérica *Numerical Pain Rate Scale* de 0-10 en reposo y en movimiento en los días postoperatorios 1, 2, 4 y 6. Una puntuación > 3 en la *Numerical Pain Rate Scale* fue considerado dolor moderado. Los datos se sometieron a las pruebas U de Mann-Whitney, Chi cuadrado, exacta de Fisher y la correlación de Pearson.

Resultados: Se incluyeron 47 pacientes. En 4 de las 11 localizaciones del dolor este fue valorado como una puntuación > 3 en la *Numerical Pain Rate Scale* (esternotomía, orofaringe, safenectomía y hombros y espalda). La máxima intensidad de dolor se registró en la esternotomía en los días postoperatorios 1 y 2, mientras que en los días postoperatorios 4 y 6 fue en la safenectomía. El dolor en movimiento fue significativamente mayor que en reposo en la esternotomía, las extremidades inferiores y en la orofaringe. El movimiento no aumentó el dolor en espalda y hombros ni en la entrada del catéter venoso central. El dolor en la esternotomía fue descrito como opresivo. Los pacientes con artrosis y los más jóvenes presentaron dolor más intenso ($p=0,049$ y $p=0,004$, respectivamente).

Conclusiones: Los principales focos del dolor tras CC fueron la esternotomía, la orofaringe, la safenectomía y el osteoarticular en hombros y espalda. Los focos de dolor mostraron diferente cronología y distinta influencia del movimiento.

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Introduction

Despite the incorporation of new analgesic drugs, acute pain management techniques, and the efforts of scientific, professional and institutional bodies to achieve effective pain control, postoperative pain is still poorly controlled—a situation that is highlighted in all review studies on the subject.¹⁻³

Pain is considered one of the main concerns of patients undergoing cardiac surgery (CS).⁴ Studies show that from 47% to 75% of patients report pain in the postoperative period of CS,⁵ and pain levels are often severe and undertreated.⁶ Poor pain management may impact recovery, rehabilitation and overall satisfaction,^{5,7} and can also lead to chronic postoperative pain syndromes, the incidence of which varies between 21% and 55%, depending on the study.^{8,9}

Postoperative pain in CS is usually evaluated at the site of either the sternotomy or the saphenectomy.^{9,10} However, post-CS pain can be caused by skin incisions, inflammation of the chest wall, rib retraction, acute intercostal neuralgia, damage to pulmonary pleura,¹¹ etc. Other sources of pain include central or peripheral lines, tracheal intubation, transoesophageal echocardiography probe, thoracic drains, immobilisation, among others.⁴ Unlike surgical wounds, these pain foci are rarely considered when assessing postoperative pain, and are therefore likely to be undertreated. As far as we know, only 1 study has addressed several pain sources after CS.⁴ The identification of the main sources of postoperative pain and their characteristics is the first step to improving pain management after CS.

Activities such as coughing, respiratory exercises, manipulation by health professionals, mobilisation, and others, may considerably increase pain in respect of at-rest pain

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