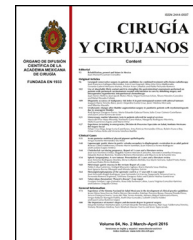




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ORIGINAL ARTICLE

Effect of compliance with an antibiotic prophylaxis protocol in surgical site infections in appendectomies. Prospective cohort study[☆]



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Received 25 November 2015; accepted 7 September 2016

Available online 27 May 2017

KEYWORDS

Antibiotic prophylaxis;
Incidence;
Surgical wound infection;
Appendectomy;
Cohort study

Abstract

Background: Antibiotic prophylaxis is the most suitable tool for preventing surgical site infection. This study assessed compliance with antibiotic prophylaxis in surgery for acute appendicitis, and the effect of this compliance on surgical site infection.

Material and methods: Prospective cohort study to evaluate compliance with antibiotic prophylaxis protocol in appendectomies. An assessment was made of the level of compliance with prophylaxis, as well as the causes of non-compliance. The incidence of surgical site infection was studied after a maximum incubation period of 30 days. The relative risk adjusted with a logistic regression model was used to assess the effect of non-compliance of prophylaxis on surgical site infection.

Results: The study included a total of 930 patients. Antibiotic prophylaxis was indicated in all patients, and administered in 71.3% of cases, with an overall protocol compliance of 86.1%. The principal cause of non-compliance was time of initiation. Cumulative incidence of surgical site infection was 4.6%. No relationship was found between inadequate prophylaxis compliance and infection (relative risk = 0.5; 95% CI: 0.1–1.9) ($P > 0.05$).

[☆] Please cite this article as: Sánchez-Santana T, del-Moral-Luque JA, Gil-Yonte P, Bañuelos-Andrío L, Durán-Poveda M, Rodríguez-Caravaca G. Efecto de la adecuación a protocolo de la profilaxis antibiótica en la incidencia de infección quirúrgica en apendicectomías. Estudio de cohortes prospectivo. *Cir Cir*. 2017;85:208–213.

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PALABRAS CLAVE

Profilaxis antibiótica;
 Incidencia;
 Infección de herida
 quirúrgica;
 Apendicectomía;
 Estudio de cohortes

Conclusions: Compliance of antibiotic prophylaxis was high, but could be improved. No relationship was found between prophylaxis compliance and surgical site infection rate.

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Efecto de la adecuación a protocolo de la profilaxis antibiótica en la incidencia de infección quirúrgica en apendicectomías. Estudio de cohortes prospectivo

Resumen

Antecedentes: La profilaxis antibiótica es la herramienta más adecuada para prevenir la infección de la herida quirúrgica. En este estudio se evaluó el cumplimiento de la profilaxis antibiótica en la cirugía de apendicitis aguda, y el efecto del mismo en la infección de sitio quirúrgico.

Material y métodos: Se ha realizado un estudio de cohorte prospectivo, para evaluar el cumplimiento del protocolo de la profilaxis antibiótica, en apendicectomías. Se evaluó el grado de cumplimiento de la profilaxis, así como las causas de incumplimiento. Se estudió la incidencia de infección de sitio quirúrgico, después de un periodo máximo de incubación de 30 días. Para evaluar el efecto del incumplimiento de la profilaxis de la infección del sitio quirúrgico, se utilizó el riesgo relativo ajustado con un modelo de regresión logística.

Resultados: El estudio incluyó a un total de 930 pacientes. La profilaxis antibiótica estaba indicada en todos los pacientes, y se administró en el 71.3% de los casos, con un cumplimiento general del protocolo de un 86.1%. La causa principal del incumplimiento fue la hora de inicio. La incidencia acumulada de infección del sitio quirúrgico fue del 4.6%. No se encontró relación entre la adecuación de la profilaxis y la infección del sitio quirúrgico (riesgo relativo = 0.5; IC 95%: 0.1–1.9) ($p > 0.05$).

Conclusiones: El cumplimiento de la profilaxis antibiótica fue alto, pero puede mejorarse. No se encontró relación entre el cumplimiento de la profilaxis y la incidencia de infección del sitio quirúrgico.

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Background

Surgical site infection is the second cause of nosocomial infection and the most common cause of infection in surgical patients.¹⁻³ Its incidence depends on the extent of contamination of the surgical procedure, and certain factors intrinsic and extrinsic to the patient⁴ and can vary from 1% in clean surgery to 20% or more in certain types of dirty surgery.⁵ Surgical site infection increases patient risk and severity and is significantly less in clean surgical procedures that have less bacterial contamination, less surgical trauma and less blood loss.⁶

A strategy of proven effectiveness for prevention and control of surgical site infection is the use of antibiotic prophylaxis^{2,7-9} to prevent the growth of micro-organisms in the surgical wound that can be produced due to contamination during the surgical act, from the interstitial space, fibrinous clots or haematomas.

The antibiotic used for antibiotic prophylaxis should reach optimal levels in the interstitial fluid and appropriate concentrations in serum, while fibrin or haematoma are in the process of forming. The main objective of antibiotic prophylaxis is to achieve high levels of the drug in the tissue during the surgical process and the hours immediately

following closure of the incision. If the antibiotic used is sufficiently active against potentially contaminating micro-organisms and high levels of the drug are achieved during the entire surgical process, prophylaxis will generally be effective.¹⁰

Our hospital has a protocol for administering antibiotic prophylaxis (Table 1) consistent with the directives reviewed in the literature, and the objective of our study was to evaluate compliance with this protocol in appendectomy patients and the effect of their adaptation on surgical site infection rates.

Material and methods

A prospective, cohort study was performed in the University Hospital *Fundación Alcorcón* of the Community of Madrid. The study included patients who had undergone appendectomy in the General Surgery and Digestive System Unit, from 1 July 2007 to 30 June 2015.

The sample size was calculated according to a confidence level of 80%, power of 80%, infection rate of 2% in the group with adequate prophylaxis, and 5% in the group with inadequate prophylaxis, a compliance/non-compliance ratio of 3

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