Decreased use of petidine in a private hospital with the implementation of a multiprofessional educative program *

Redução do uso de petidina em hospital privado com a implantação de um programa educativo multiprofissional

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SUMMARY

BACKGROUND AND OBJECTIVES: Morphine and petidine are the most commonly used opioids to treat pain in hospitalized patients. Morphine is recommended by the World Health Organization (WHO) and by the International Association for the Study of Pain because it is less toxic than petidine, which is still largely used in Brazil and in other developing countries. This study aimed at evaluating the decreased use of petidine after the implementation of an educative program to decrease its consumption.

METHOD: Intervention, quantitative and prospective study using as information source the pharmacy database. Petidine prescriptions were monitored with educative interventions on prescribers, orienting about drug effects and suggesting the change to a different opioid, according to criteria established by WHO and the International Association for the Study of Pain. Opioids prescription data were collected from 2005 to 2009 and were analyzed by descriptive and inferential statistics and linear regression.

RESULTS: There has been significant decrease (r = 0.96, beta = 0.12, p = 0.003) in the use of petidine, as well as a significant increase in the use of morphine (r = 0.96, beta = 0.47, p = 0.02) during the period.

CONCLUSION: The implementation of a multidisciplinary and educational protocol to decrease petidine prescription has significantly contributed to decrease its consumption, showing the efficacy of an educative program.

Keywords: Morphine, Opioid, Pain, Petidine.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A morfina e a petidina têm sido os opioides mais comumente utilizados para o tratamento de dor em pacientes internados. A morfina é recomendada pela Organização Mundial de Saúde (OMS) e pela Associação Internacional para Estudo da Dor por ser menos tóxica que a petidina, que ainda é largamente utilizada no Brasil e em outros países em desenvolvimento. O objetivo deste estudo foi avaliar a redução do uso da petidina, após a implantação de um programa educativo visando reduzir o seu consumo.

MÉTODO: Estudo de intervenção, de natureza quantitativa e prospectiva, utilizando como fonte de informação o banco de dados da farmácia. Foram monitoradas as prescrições de petidina com intervenção educativa sobre os prescritores, orientando sobre os efeitos do fármaco e sugerindo a mudança para outro opioid, segundo os critérios estabelecidos pela OMS e International Association for the Study of Pain. Os dados foram levantados das prescrições de opioides durante o período de 2005 a 2009, e foram analisados por estatística descritiva e inferencial e regressão linear.

RESULTADOS: Houve redução significativa (r = 0.96,
beta = 0.12, p = 0.003) no uso de petidina, bem como aumento significativo do uso de morfina (r = 0.96, beta = 0.47, p = 0.02) durante o período.

CONCLUSÃO: A implantação do protocolo multidisciplinar educacional para redução da prescrição de petidina contribuiu significativamente para a redução do seu consumo, demonstrando a eficácia do programa educativo.

Descritores: Dor, Morfina, Opioide, Petidina.

INTRODUCTION

The World Health Organization (WHO) recommends the use of potent opioids for acute or severe chronic pain associated to non-opioid drugs, adjuvants and non-pharmacological techniques, aiming at decreasing pain and improving quality of life\textsuperscript{1,2}. Risks, benefits, availability and costs of analgesic options should be considered\textsuperscript{3}. Adequate pain management is critical for the good evolution of patients because evidences show that effective postoperative analgesia contributes to earlier motility, less risk for cardiopulmonary complications, decreased hospitalization period and costs, in addition to providing more comfort and satisfaction to patients\textsuperscript{4-6}.

Opioids are underused in Brazil due to beliefs and prejudices, as well as to inadequate information about their best use. The action mechanisms of opioids are not well known, as well as their indications and counterindications\textsuperscript{6,8}.

Several health agencies have proposed guidelines for opioids use\textsuperscript{1,2,8} and recommend restricted use of petidine, replacing it by other less toxic opioids. In addition, the use of this opioid to treat chronic pain is formally counterindicated.

In spite of the importance of opioids to treat acute and chronic pain, most Brazilian hospitals do not have data on its consumption. This study aimed at evaluating petidine consumption in a private hospital after the implementation of an institutional multiprofessional protocol.

METHOD

Intervention, quantitative and retrospective study on petidine and morphine prescription from 2005 to 2009. Data related to 3406 petidine prescriptions were collected from the information records system of the pharmacy sector, were tabulated and analyzed by descriptive and inferential statistics and linear regression using the statistical program SPSS.

The implementation of the protocol to decrease petidine consumption consisted of issuing an alert by the pharmacy control system to a multidisciplinary group composed of pharmacists and nurses whenever this drug was prescribed, thus generating educational measures. The pharmacist and/or the nursing team would get in touch with the prescribing physician suggesting, in person or by telephone, and through a letter prepared by the institutional protocol, the replacement of petidine by morphine, informing about petidine toxic effects, the most adequate replacement to control pain and the options of opioids in similar analgesic doses, in addition to an algorithm to treat possible adverse effects.

RESULTS

The study was carried out in an institution treating 140 thousand patients/year and data refer to mean annual consumption of all drugs prescribed, and not only to drugs prescribed to patients under opioids (Table 1). Although different drugs are prescribed to control acute and chronic pain, we decided to compare just the consumption of the active principle petidine with morphine, stressing that due to the difference in po-

Table 1 – Total and mean consumption by patient of petidine and morphine by period.

<table>
<thead>
<tr>
<th>Years</th>
<th>Morphine (mg)</th>
<th>Petidine (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total consumption and consumption by patient</td>
<td>Total consumption and consumption by patient</td>
</tr>
<tr>
<td>2005</td>
<td>152,300</td>
<td>0.128</td>
</tr>
<tr>
<td>2006</td>
<td>224,400</td>
<td>0.191</td>
</tr>
<tr>
<td>2007</td>
<td>246,100</td>
<td>0.211</td>
</tr>
<tr>
<td>2008</td>
<td>313,600</td>
<td>0.251</td>
</tr>
<tr>
<td>2009</td>
<td>240,600</td>
<td>0.183</td>
</tr>
</tbody>
</table>

Petidine 100 mg, 2 mL ampule
Morphine 10 mg AP, 1 mL ampule
Value of linear regression coefficient for the use of petidine $r = 0.96, \beta = 0.12, p = 0.003$
Value of the linear regression coefficient for the use of morphine $r = 0.96, \beta = 0.47, p = 0.02$
tency and pharmacokinetics of drugs, prescribed
doses are very different.
Results have shown a significant decrease \( r = 0.96, \beta = 0.12, p = 0.003 \) in petidine use, as well as a
significant increase \( r = 0.96, \beta = 0.47, p = 0.02 \) in morphine use during the period. After the imple-
mentation of the protocol, petidine consumption has
decreased 29% from 2005 to 2006, 17% from 2006 to
2007, 11% from 2007 to 2008 and 50% from 2008 to
2009. The decrease of petidine prescription from 2005
to 2009 was 72%.
After the implementation of the protocol, morphine
prescription has increased progressively and signifi-
cantly in the period from 2005 to 2009 (42%). In 2006
the increase was 49%. In 2007 the increase was 11%.
When comparing 2008 to 2007, the consumption in-
creased 17%.
In 2006, 87% of contacted physicians agreed to adhere
to the institutional protocol prescribing opioids differ-
ent from petidine, being that 13% continued to prescribe
petidine in spite of educational measures.
During 2009, the number of physicians adhering to the
protocol reached 97%.
Adhesion indices and decreased petidine consumption
indicate the efficacy of the implemented protocol and
were considered satisfactory according to institution-
al criteria.

**DISCUSSION**

Petidine was synthesized as an anticholinergic agent
with espasmolytic function, but its analgesic prop-
ties were soon discovered and it started to be used to
treat acute pain due to its availability and low cost
Its use was justified because it was believed that it
was the best option for cases where the muscarinic ef-
fect is undesirable. Petidine does not cause pupil con-
striction, is less obstipant and produces less pruritus,
although having one eight of morphine potency, with
half-life of three to four hours, with shorter effect and
duration than morphine and after two or three hours
pain reappears being needed a new dose
Its metabolite is norpetidine, excreted by the urine,
with half-life of 14 to 21 hours, but may exceed 30
hours in elderly and / or kidney failure patients
Prolonged administration results in the building up
of norpetidine, which stimulates the central nerv-
ous system (CNS) generating shivering, myoclonia,
agitation, seizures and pruritus
Norpetidine has
twice more stimulating and potentially toxic effects
in the CNS and has only half the analgesic properties
of petidine.
Due to petidine adverse effects, health agencies have
condemned its use. For example, a percentage of
petidine prescriptions as compared to other opioids dur-
ing hospitalization has been used as quality parameter
for hospital accreditation in developed countries.
Institutions where petidine prescriptions exceed 10%
of total opioid prescriptions during hospitalization are
required to have a therapeutic updating program with
emphasis on opioids.
Studies comparing the postoperative use of morphine
and petidine show that due to adverse effects and anal-
gesic potency, petidine is inferior to morphine,
being indicated by some authors only to control postoperative
shivering. However, the treatment of shivering with
clonidine, intraoperative body warming and the main-
tenance of central temperature significantly decrease the
incidence of postoperative shivering, challenging the
usefulness of pharmacological treatment with petidine.
In 2006, the Health Department recommended the ex-
clusion of petidine from the list of essential drugs be-
cause it is three times more expensive than morphine
without any therapeutic advantage. There is consensus
not to indicate petidine due to low cost/benefit and ef-
ficiency, however morphine is recognized as one of
the best analgesics to treat severe pain, being the golden
standard with regard to analgesic potency.
In spite of these evidences and of the few data on the use
of opioids in Brazilian hospitals, available studies report
the excessive petidine consumption. Data found in
this study are similar to those reported by the literature,
with excessive petidine use in Brazilian and other de-
veloping countries hospitals.
Taking into consideration that petidine should not be
considered the opioid of choice to treat acute or chronic
pain when opioid analgesia is needed, the multidisci-
plinary effort of the team composed by nurses, pharma-
cists and physicians has led to the implementation of the
protocol to decrease the use of this drug, significantly
decreasing petidine prescription and increasing mor-
phine prescription, showing that although national and
international consensus on the use of opioids have been
established for years, there is the need for educational
interventions to manage pain and for the use of opioids
in a more adequate way, since the use of opioids is, in
general, inadequate.
This study has limitations because it was not possible to
obtain clinical and demographic data, the number of pa-
tients and the petidine dose prescribed by patient, since
the database used operates only with absolute prescription figures.

CONCLUSION

The implementation of an educational multidisciplinary protocol to decrease petidine prescription has significantly contributed to reduce its consumption, showing the efficacy of an educative program.

REFERENCES


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