Use of NSAIDs in France: Analysis from French reimbursement (CNAM-TS) database

Manoj Sharma¹*, Sinem E. Gulmez², Régis Lassalle³, Nicholas Moore⁴

¹Research Fellow. INSERM U657 Pharmaco-Epidémiologie, Service de Pharmacologie, Université de Bordeaux, Bordeaux, France. Manager, Global Pharmacovigilance Dept, Panacea Biotec Ltd, New Delhi, India
²Associate Professor of Pharmacology, M.D., PhD. INSERM CIC-P 0005 Pharmaco-Epidémiologie, Service de Pharmacologie, Université de Bordeaux, Bordeaux, France.
³Statistician and Database Manager, INSERM CIC-P 0005 Pharmaco-Epidémiologie, Service de Pharmacologie, Université de Bordeaux, Bordeaux, France.
⁴Professor of Clinical Pharmacology, MD, PhD, FRCP(Edin), FISPE. INSERM CIC-P 0005 Pharmaco-Epidémiologie, Service de Pharmacologie, Université de Bordeaux, Bordeaux, France.

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ABSTRACT

Background: Reimbursement databases provide indirect data regarding drug use or its exposure. In France, approximately 85% of the general population is covered by the national health insurance system (Caisse Nationale d' Assurance Maladie des Travailleurs Salariés (CNAM-TS)), which reimburses prescribed drugs and other medical expenses to salaried persons and families. Since analysis of reimbursement databases ensures that the prescribed drugs have at least been dispensed, even if not used, the present study was conducted to assess the utilization pattern of nimesulide and other NSAIDs in French population from reimbursement database (CNAM-TS). Method: Reimbursement data of NSAIDs (ATC code M01) were extracted from CNAM-TS database for the period 2002-2007. The defined daily doses (DDDs) were calculated from the number and size of packages of each NSAID and the different strength of the unit of each formulation package. Information pertaining to strength of the unit (tablets and capsules) were not included in the analysis. The numbers of each formulation (ATC code N02BA51) and formulations other than the solid oral dosage forms (ATC code N02AC54); acetylsaliclic acid in association with psycho-epileptics (ATC code N02AC31); dextropropoxyphene in association with psycho-epileptics (ATC code N02AC54); acetaminophen in association with psycho-epileptics (ATC code N02AC54) and formulations other than the solid oral dosage forms (tablets and capsules) were not included in the analysis. The numbers of boxes of each product were extracted with a separate identifier (CIP code) for each formulation package. Information pertaining to strength of the unit dose, number of packets reimbursed and the amount reimbursed was present in the database while information on daily dose or treatment duration was not recorded in the reimbursement database. Results: Paracetamol was the most used antipyretic and analgesic drug with the percentage consumption of 42.07%. The top ten NSAIDs were ketoprofen (10.23%), ibuprofen (8.70%), piroxicam (6.92%), diclofenac (6.88%), celecoxib (6.64%), naproxen (4.97%), rofecoxib (3.70%), nimesulide (2.53%), aceclofenac (1.29%) and nabumetone (1.12%). Conclusion: Analysis on the percentage of money reimbursed to patients and prescribers (special category and general category) reflects the prescription and consumption habits of prescribers and patients respectively. The ranking of the NSAIDs based on their consumption in French population was similar with previous studies where ketoprofen, ibuprofen, piroxicam, diclofenac, and nimesulide were among the top 5 NSAIDs in Slovakia, Finland, Norway, Zagreb and Croatia.

KEY WORDS: Pharmacoepidemiology, drug utilization, French reimbursement database, nimesulide, NSAID.

INTRODUCTION

Background

Non-steroidal anti-inflammatory drugs (NSAIDs) are one of the most commonly used classes of medications worldwide.¹ It has been estimated that more than 30 million people take NSAID daily.² Patients with arthritis are among the most frequent users of NSAID. The utilization of prescription of NSAIDs needs to be evaluated as this facilitates in the reduction of the costs associated with the use of NSAIDs.

Reimbursement databases provide indirect data for drug utilization. In France, approximately 85% of the general population and 69% of those aged 65 years and over are covered by the national health insurance system (Caisse Nationale d’ Assurance Maladie des Travailleurs Salariés (CNAM-TS)), which reimburses prescribed drugs and other medical expenses to salaried persons and families.³⁻⁵ All reimbursement claims are recorded in the computerized databases of the CNAM-TS, which could provide data on drug exposure.¹⁻⁴ Since analysis of reimbursement databases ensures that the prescribed drugs have at least been dispensed, even if not used, we conducted the study to assess the utilization pattern of nimesulide and other NSAIDs in French population from CNAM-TS. The primary objective was to study trends in nimesulide and other NSAIDs consumption or utilization in France from 2002 to 2007 and the secondary objective was to compare use of different NSAIDs and other analgesic drugs before and after rofecoxib withdrawal in French population.

MATERIAL AND METHODS:

All NSAIDs reimbursed were extracted from CNAM-TS database for a 5-year period (2002-2007). Assessment of trends in nimesulide and other NSAID consumption was studied as number of users of each drug and number of DDD (defined daily dose) over the study period. Utilization was measured by total DDD.⁶⁻⁷ NSAIDs prescribed at fixed dose combinations (i.e. dextropropoxyphene in association with psycho-epileptics (ATC code N02AC54); acetalsalicic acid in association with psycho-epileptics (ATC code N02BA51) and formulations other than the solid oral dosage forms (tablets and capsules) were not included in the analysis. The numbers of boxes of each product were extracted with a separate identifier (CIP code) for each formulation package. Information pertaining to strength of the unit dose, number of packets reimbursed and the amount reimbursed was present in the database while information on daily dose or treatment duration was not recorded in the reimbursement database.

Base of reimbursement refers to base of refund or repayment (a part or fraction of price of the medicine) in Euros fixed by CNAM to decide the percentage of the payment or the reimbursement to be made to patient. It
vares from one year to another and from type of product or medicine. The base of reimbursement was extracted for type of prescribers i.e special category prescribers (prescribers from hospitals/surgeons/dentists/orthopedists) and private practitioners (other prescribers). A comparative analysis was made for the prescribing patterns of the prescribers. The prescribing pattern was analyzed from the amount reimbursed to the special category and private practitioners.

Data analysis

The number of DDDs for each drug reimbursed was calculated in the following way:

% NSAID Consumption = DDD sold of NSAID*100 / Total DDD sold of all NSAIDs

The percentage of reimbursement per year for individual NSAID was calculated in the following way:

Percentage of reimbursement = Amount reimbursed / Base of reimbursement

The prescribing patterns of two prescribers (special category prescribers vs other prescribers) was calculated in the following way.

Percentage of amount of reimbursement by special category prescriber (private practitioners) = Base of reimbursement to private practitioner / Base of reimbursement

Percentage of amount of reimbursement by other prescribers = Base of reimbursement to other prescriber / Base of reimbursement

RESULTS:

A total of 26 NSAIDs were identified in CNAM-TS reimbursement database for the period 2002-2007. Among these, three NSAIDs, alminoprofene (ATC code M01AE16), diacerine (ATC code M01AX21) and oxaceprol (ATC code M01AX24), were not listed in the ATC / DDD index 2009. Analysis for percent-

cage of consumption showed that paracetamol is the highly consumed (42.07%) and private practitioners (other prescribers) was calculated in the following way.

Percentage of amount of reimbursement by other prescribers = Base of reimbursement to other prescriber / Base of reimbursement

Analysis of the database showed that there was a significant increase in the consumption of paracetamol from the year 2002 (35.2%) to 2007 (48.8%), which was followed by ketoprofen and ibuprofen (Table 1, Figure). In 2002, celecoxib consumption in French population was 10.3%, which further decreased to 3.5% in 2007 (Table 1). For rofecoxib there was a decrease in the consumption from 2002 to 2004. From 2002-2007 the percentage of nimesulide consumption in French population increased from 2.1% to 2.9%. Analysis for the percentage of money reimbursed to patients in France showed that from year 2002 to 2007 the maximum reimbursement of the amount was made for phenylbutazone followed by indomethacine. The percentage of reimbursement was same for paracetamol and celecoxib for the period 2002 (73.4%). From 2002 to 2003 reimbursement percentage was nil for aceclofenac. There was no significant changes in the percentage of amount reimbursed from year 2002-2007 for naproxen, mefanamic acid, piroxicam, tenoxicam, nabumetone, niflumic acid (Table 2).

Analysis for percentage of amount reimbursed to general practitioners/private practitioners (GP) during the period 2002-2007 showed that more than 95% of the base amount was reimbursed for ibuprofen, floctafenine, acetylsalicylic acid (ASA), tenoxicam, and nabumetone. For other category prescribers more than 10% of the reimbursement base was reimbursed for drugs roprofen, phenylbutazone and indomethacine.

Table 1: Consumption (%DDD) from 2002-2007.

<table>
<thead>
<tr>
<th>Year</th>
<th>Paracetamol</th>
<th>Ketoprofen</th>
<th>Ibuprofen</th>
<th>Celecoxib</th>
<th>Rofecoxib</th>
<th>Nimesulide</th>
<th>Nabumetone</th>
<th>Diclofenac</th>
<th>Naproxen</th>
<th>Aceclofenac</th>
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<td>2002</td>
<td>10.3</td>
<td>8.3</td>
<td>2.1</td>
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<td>7.53</td>
<td>6.68</td>
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<td>9.1</td>
<td>8.4</td>
<td>2.2</td>
<td>1.05</td>
<td>37.2</td>
<td>8.9</td>
<td>8.6</td>
<td>7.22</td>
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<td>6.1</td>
<td>2.5</td>
<td>1.20</td>
<td>38.6</td>
<td>9.7</td>
<td>8.26</td>
<td>6.44</td>
<td>6.44</td>
<td>5.2</td>
</tr>
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<td>2005</td>
<td>3.5</td>
<td>2.8</td>
<td>1.45</td>
<td>1.08</td>
<td>44.9</td>
<td>11.05</td>
<td>8.99</td>
<td>7.46</td>
<td>7.49</td>
<td>5.1</td>
</tr>
<tr>
<td>2006</td>
<td>3.3</td>
<td>2.7</td>
<td>1.08</td>
<td>0.71</td>
<td>48.8</td>
<td>11.48</td>
<td>9.09</td>
<td>6.09</td>
<td>6.96</td>
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<tr>
<td>2007</td>
<td>3.5</td>
<td>2.9</td>
<td>1.08</td>
<td>0.71</td>
<td>48.8</td>
<td>11.48</td>
<td>9.09</td>
<td>6.09</td>
<td>6.96</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Table 2: Consumption (%DDD) of NSAIDs per year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Paracetamol</th>
<th>Ketoprofen</th>
<th>Ibuprofen</th>
<th>Celecoxib</th>
<th>Rofecoxib</th>
<th>Nimesulide</th>
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<td>2002</td>
<td>35.2</td>
<td>8.44</td>
<td>7.91</td>
<td>10.3</td>
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<tr>
<td>2005</td>
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<td>11.08</td>
<td>8.99</td>
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<td>2006</td>
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<td>9.00</td>
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<td>11.48</td>
<td>9.09</td>
<td>3.5</td>
<td>-</td>
<td>2.9</td>
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</tbody>
</table>
the large size of these databases covers the entire French population. The database also covers that population whose income is insufficient to pay for their own medication.

In France, drug dispensing is made for a maximum of 30 days irrespective of whatever the actual prescription may be (i.e. a drug which is prescribed for 90 days will be dispensed in three times). In most European countries, in France also drugs are dispensed in packages which are indivisible by the pharmacist. At each dispensation, the pharmacist automatically submits reimbursement claims electronically. Analyses of reimbursement databases ensure that the prescribed drugs have at least been dispensed. In the present study, analysis was based on the information related to number of packets reimbursed and the cost / amount reimbursed to patient, prescriber (general practitioner / hospital practitioner) available in the CNAM-TS reimbursement database. Paracetamol was the most frequently used antipyretic (general practitioner / hospital practitioner) available in the CNAM-TS reimbursement database. Paracetamol was the most frequently used antipyretic and analgesic drug. The top 10 NSAIDs included ketoprofen, ibuprofen, piroxicam, diclofenac, celecoxib, naproxen, rofecoxib, nimesulide, acceclofenac and nabumetone. Our results on the ranking of the NSAIDs based on their consumption in French population were similar with the findings made on the ranking of the NSAIDs in other studies where ketoprofen, ibuprofen, piroxicam, diclofenac and nimesulide were ranked amongst the top 5 NSAIDs in Slovakia, Finland, Norway, Zagreb, and Croatia. In comparison to the piroxicam, diclofenac and nimesulide were ranked amongst the top 5 NSAIDs in other studies where ketoprofen, ibuprofen, piroxicam, diclofenac and nimesulide were ranked amongst the top 5 NSAIDs in other studies. Our results on the ranking of the NSAIDs based on their consumption in French population were similar with the findings made on the ranking of the NSAIDs in other studies where ketoprofen, ibuprofen, piroxicam, diclofenac and nimesulide were ranked amongst the top 5 NSAIDs in Slovakia, Finland, Norway, Zagreb, and Croatia. In comparison to the piroxicam, diclofenac and nimesulide were ranked amongst the top 5 NSAIDs in other studies where ketoprofen, ibuprofen, piroxicam, diclofenac and nimesulide were ranked amongst the top 5 NSAIDs in other studies.

CONCLUSION
The present study provides a baseline data for monitoring future consumption or prescribing trends of NSAIDs in French population. The study demonstrates a reduction of celecoxib use in patients due to withdrawal of rofecoxib in 2004 with a consequent increase in the use of paracetamol and classic NSAIDs such as ibuprofen and ketoprofen.

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PREVIOUS PRESENTATION:
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