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Full Length Research Paper

Prevalence of Adverse drug events in the consultation centre of Ibn Sina

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Incidence of adverse drug reactions [ADRs] leads to many conflicting discussions about patients safety in many countries. It has been shown that ADRs are more frequent in outpatient department rather than indoors. We wanted to find out if there is similar situation in Morocco as well. Due to lack of National data we investigated the incidence of ADRs in patients of teaching hospital Ibn Sina in Rabat. Out of the total number of patients who attended the above hospital during study period of 5 days in February. Sample size 644. 113[17.54%] patients developed at least one ADR [nearly 1.47ADR/per patient]. Out of these patients 4 patients were hospitalized as a direct result of ADR. ADRs were more common in female patients then males. Maximum ADRs occurred in the age bracket of 40-49 years. Maximum cases were recorded from Pnumology service. Large size and longer study period is required to get answer to our question.

Key words: Adverse drug reaction, serious adverse drug reactions, rate prevalence, transversal study, outpatients.

INTRODUCTION

Drug safety was put so as to detect ADR after marketing of drugs. It is based on spontaneous notification of ADR by health professionals (Benkirane et al., 2007). It is also based on epidemiologic studies. In this sense, prevalence studies in hospital are interesting because they are observational. Also because they target a population at risk of developing an ADR. Most importantly because they allow important detection of ADR in the hospital (Benimouden et al., 2007).

In Morocco, Moroccan pharmacovigilance centre (MPC) conducted this survey in collaboration with the Committee on medicines of Ibn Sina hospital. Concerned laboratories of the University Ibn Tofail contributed also in this study.

The study's main aim is collecting all ADR in hospital. Another objective is assessment of how serious these ADR are.

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Patients and methods

Design: Prospective transversal study. It is approved by the committee on medicines of Ibn Sina hospital.

Setting: Outpatients of the consultation centre Ibn Sina. It is the most important teaching hospital of the kingdom. It has a capacity of 1045 beds.

Patients: This study was performed during five days in the month of February. The sample of patients was all patients age ranges. It included not only patients of ambulatory consultation but those of hospital wards.

Definitions and classifications of events: At the first stage, we identified outpatients who developed ADR. According to WHO, ADR is defined as "A response to a drug which is noxious and unintended and which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease or for modification of physiological function" (Biron, 1999). Non intentional drug overdose were included as an ADR whereas outpatients with

intentional drug overdose were not included. Patients who receive a drug to whom they have a history of allergy or previous reaction weren't assessed in this study (Schumock et al., 1992). This is because physicians weren't concerned about preventability of ADR.

Patients were therefore classified into two populations:

i. The cohort (total outpatients surveyed).
ii. The population with ADRs including patients whose cause of admission was due to an ADR.

The ADR causality's assessment was performed by two experienced investigators from the MPC using the French method. According to this method, intrinsic assessment is based on clinical patterns. It relies on chronological criteria and semiological criteria. It is based on the following criteria: Onset delay, dechallenge, rechallenge, clinical or biological patterns, other possible causes. Assessments are qualified as very likely, likely, probable and doubtful (Begaud, 1985).

The third outcome, we studied serious ADRs. An ADR is considered as serious if at any dose it results in death or is life-threatening, or requires patient hospitalisation or prolongation of existing hospitalisation or results in persistent or significant disability/incapacity (Health Canada, 2007).

Data collection strategies: This study involved 16 investigators from the MPC and corresponding doctors from each service. Investigators visited the services daily. They filled completely the yellow notification paper when an ADR appeared. For all patients categorised as having an ADR, the minimum informations required were: demographic characteristics, medical history, indication of the treatment, nature of the ADR, drugs involved, delay of onset, and the outcome.

The data were collected from the service's register of admission and the patient-dossier. Sometimes, physicians solicited informations from practitioners.

Analysis: Our first step was describing the demographics of our populations. Then, we calculated the global prevalence of ADR. We calculated also the prevalence of ADRs according to the service of consultation. Finally, we compared the demographics and the services of hospitalisation. The statistical test used is chi-square.

RESULTS

Epidemiology of patients

644 patients represented by 248 males and 394 females were monitored during 5 days. Of the 644 outpatients, 113 experienced at least one ADR, the rate prevalence of ADR was evaluated to 17.54%. The rate prevalence of the admissions which required patient hospitalisation for an ADR represented 3.7%. The age bracket of the 113 patients who presented ADR was between 40 and 49 years. The median age of the population who presented an ADR was 44, 73 ± 18,04 years. 72 %of the total patients consulted in medical units, 26% in surgical units and 2%in the intensive care units. Per department, the rate prevalence of ADR registered was 7% in surgical services and 18% in the medical services. The highest rate of ADR was recorded in pneumology service (19%). (Table I). In the ADR group, women are concerned in 67% and men in 29%. The male to female sex ratio was 0.43.

Characteristics of ADR

The top three drug classes causing ADR were antibiotics (19.04%), Anti inflammatory drugs (17.04%), and antihypertensive drug (11.42%). Adverse reactions among patients who received these drugs are detailed in Table 2. The systems and organs most frequently affected by ADR were gastro intestinal (38.92%), cutaneous (13%), nervous (7.78%), haematological (7.78%) and respiratory (7.18%) (Table 3).

The outcome of the patients who experienced ADR was favourable in 88%, for 5 patients the outcome wasn't precised because drop was insufficient, four patients died and three patients presented a sequelae. ADR caused hospitalisation at a rate of 3.7%, 1.7% of ADR were life threatening, and overall 5.5% of the recorded ADR were serious.

The causality assessment for the cases considered as due to ADR was performed according to the French method. We found that 48% were categorised as "probable", 19% were "very likely", 1% were likely and 32% were "doubtful".

DISCUSSION

This study confirms that ADRs represent a non negligible disease burden in outpatients. Our data show that 17.54% of outpatients experienced one or more ADR. A similar transversal study conducted in Austria found that the rate of drug related problems is between 2.4% and 22% (Easton et al., 2004).

It seems difficult to compare these reported frequencies because of different settings, different data collection methods used and discrepancies underlying ADR definition. In our context, we must take into account that the lack of awareness of health professionals concerning their responsibility in the ADR reports results in underreporting (Benkirane et al., 2007).

Female are at high risk to develop ADR (Table 4). among inpatients in 2004 and in other studies (Benkirane et al., 2007; Gandhi et al., 2000). Few scientific prouves That has been already reported in a survey done by the

Table 1. Prevalence of ADR in the clinical setting. Prevalence: (Number of patients with ADR/ Total outpatients) X 100.

Services		Number of outpatients	Patients with one DR at least	Prevalence of ADR
Medical services				
	Radiology	1	1	0.88%
	ND	25	1	0.88%
	Pneumology	56	22	19.45%
	Cardiology	45	13	11.45%
	Dermatology	82	9	7.96%
	Endocrinology	79	12	10.61%
	Gastrology	64	15	13.27%
	Internal medecine	56	10	8.84%
	Nephrology	52	11	9.73%
	Neurology	6	2	1.76%
	Traumatology	82	10	8.84%
	Urology	34	2	1.76%
Surgical service		47	1	0.88%
Neurosurgical service		9	3	2.65%
Intensive care unit		1	1	0.88%
Total		644	113	17.54%

Table 2. Description of ADR among patients taking drugs causing maximum of complications.

Drug	System involved	Symptoms
	Allergy	Oedema, Skin reaction.
Antibiotics	Gastro-intestinal disorder	Gastritis, vomiting, diahhrea, Epigastric pain, ulcer.
	Neurological	Vertigo.
	Gastro-intestinal disorder	Epigastric pain, gastric pain.
Anti-inflammatory	Neurological	Asthenia.
	Hyperuricemia	
Antihypertensive drug	Neurological	Vertigo, asthenia.

MCP allow us to conclude to this day about the incidence of ADR within women. This is due to the fact that women are overmedicated. Some pharmacokinetic parametres favor high plasmatic concentrations. Improvement of declaration of ADR can allow us to predict that women is a risk group(Levasseur, 2004). Regarding the mean age, it is similar to the one obtained in a study among patients that had drug complications and which was 44.6 years (Gandhi et al., 2000).

In our study, the drug class list associated with ADRs was headed by anti inflammatory, and antibiotics drugs. That is close to the majority of the reported studies (Winterstein et al., 2002).

The systems and organs most frequently affected by ADR were gastro intestinal, cutaneous and nervous ones. This is similar to the result obtained among outpatients in the emergency department in an American hospital (Kenneth et al., 2003). The outcome was favorable as it

Table 3. Description of ADR among patients taking prescription drugs.

ADR		Number of cases	Rate of ADR
Gastro-intestinal disorders	-Epigastric pain -Diarrhea -Ulcer -Vomiting -Pyrosis -Stomach pain -Constipation -Colopathy	65	38.92%
Allergy	-Skin reactions -Quick oedema	21	12.57%
General signs	-Fever, cephalees, asthenia, anorexia	13	7.78%
Cardio vascular perturbation	-Hypertension -Tachycardia -Hypotension	13	7.78%
Neurological	-Convulsions -Irritability -Vertigo -Agitation -Loss of consciousness	12	7.18%
Hematological disorder	-Granulopenia	1	0.59%
Respiratory disorder	-Cough -Respiratory distress -Bronchitis	9	5.38%
Ophtalmological	-conjunctivitis	1	0.59%
Other effects	-Hepatic disorder	4	2.39%
	-Articular disorder	9	5.38%
	-Hyperuricemia	1	0.59%
	-Hemorraghe	2	1.19%
	-Metabolic disorder	10	5.98%
	-Otorhinolaryngological disorder	5	2.9%
	-Gynecological disorder	2	1.19%
Total		167	100

Table 4. Comparison of demographics and clinical setting of Patients with ADR and the cohort of Patients surveyed during the study period.

Variable	Patients with ADRs (n=113)	cohort (n :531)	p
Sex : Female/Male	63/23	331/225	0.014 (S)
Services :			
Medical	107	449	
Others(surgical, ICU)	6	52	0.09(NS)

*: The statistical significance level was set at p value <0.05.

was noticed during a French survey done in the cardiology department (Jama et al., 1993).

Serious ADR are rare within outpatients: 5% was the rate obtained in a study done in the Emergency Department of an American Hospital (Gandhi et al., 2000). Among departments, the highest rate was (Winterstein et al., 2002), ADRs were mostly recruited in medical services. Maximum cases were recorded from Pneumo-

logy service. That could be argued by the fact that cough is a very frequent cause of consultation (Janssens, 2004). Furthermore, 25% of patients consults because of asthma in the hospital of Abidjan (Partridge, 2005). Finally, tobacco is a risk factor that promotes the occurrence of ADR and consultation in pneumology service (Carbonin et al., 1991).

Even if the study was limited by a short period that leads to underestimate the real ADR rate prevalence. However, it contributed in the increasing the number and quality of spontaneous ADR reports in this hospital. If we whereas in reality, the average number of ADR reported extrapolate the number of ADR collected during 5 days to one year, we expect to receive 12000 reports per year, issued from the concerned hospital reaches 200 per year (Benkirane et al., 2007).

This study confirms that ADRs represent a non negligible disease burden in outpatients. Nevertheless, longer study period is required for planning adequate strategies. This is in the aim of ensuring medical care.

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