



The Incidence of Drug Hypersensitivity and Idiosyncrasy as a Presenting Problem to an Emergency Department

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ABSTRACT

Background: The community incidence of allergic reactivity to medications is poorly documented, but thought to be less than that observed in inpatient populations.

Objective: To describe the outpatient epidemiology of drug hypersensitivity occurring in a tertiary care center in Canada.

Methods: Three years of emergency department (ED) charts were reviewed. All ED visits given a discharge diagnosis of "allergic reaction" or "anaphylaxis" were pulled and directed to the investigator. Chart review and direct patient contact determined if criteria for these diagnoses were properly met.

Results: Over the 3-year time period, 153 990 patients were assessed in the ED at KGH. A total of 554 cases of "allergic reactions" (including anaphylaxis) were identified. Of these, 111 were labeled secondary to medications. Further chart review reduced this number to 102 reactions that could be classified as either allergic or idiosyncratic (pseudo-allergy). This yielded a 0.07% incidence of drug hypersensitivity/idiosyncrasy as a presenting problem. 22 (21.8%) of the reactions were anaphylactic in nature, 3 required admission to hospital, there were no fatalities. Antibiotics were the most commonly implicated medication, accounting for 57 (56.4%) of all reactions. Of the antibiotics, penicillins (21), macrolides (11) and sulfonamides(9) were most frequently involved. NSAID idiosyncrasy accounted for 15 (14.9%) of the reactions. Opiates followed with 8 (7.9%).

Conclusion: Drug hypersensitivity/idiosyncrasy is an important presenting problem to emergency departments in Canada and elsewhere. The incidence in this study was 0.07%, mostly to antibiotics.

INTRODUCTION

• Drug hypersensitivities and pseudo-allergic reactions represent an important aspect of iatrogenic pathology

• Exact incidence of allergic reactivity to medications in the community is unknown

• Rates among inpatient populations range from 0.6% to 2.7%

• Currently no community/outpatient epidemiologic data from Canada has been reported

OBJECTIVE

• Aim of the current study was to describe community incidence of drug hypersensitivity in a tertiary care center in Canada

RESULTS

- Over the 3-year time period, 153 990 patients were assessed in the Emergency Department at KGH
- A total of 554 cases of "allergic reactions" (including anaphylaxis) were identified (0.36% of visits)
- Of these, 111 were labeled secondary to medications
- Further chart review reduced this number to 102 reactions that could be classified as either allergic or idiosyncratic (pseudo-allergy)
- Thus the incidence of drug hypersensitivity/idiosyncrasy as a presenting problem was 0.07%
- Only 22 of the patients were male (21.5%)
- Average age of patients was 39 (range 11 months to 93 years)

METHODS

- Retrospective chart review of emergency department visits from Kingston General Hospital (KGH) over a 3 year period from September 1999 to November 2002
- All Emergency visits given a discharge diagnosis of "allergic reaction" or "anaphylaxis" were pulled and directed to the investigator
- Chart review and direct patient contact determined if criteria for hypersensitivity reaction and/or idiosyncratic reaction (pseudo-allergy) were met
- Reactions had to include symptoms consistent with histamine release (e.g. pruritus, urticaria, angioedema, wheeze, etc.) and could not be better explained by an alternative diagnosis (e.g. side effect of medication, intercurrent illness)
- Reactions to NSAIDs, and opiates were classified as idiosyncratic (pseudo-allergy) as they are mediated through non-IgE mechanisms, all others were considered an allergic reaction
- Anaphylaxis was defined as per the Canadian Pediatric Surveillance Program:
 - a severe allergic reaction to any stimulus, having sudden onset, involving at least two body systems, with multiple symptoms

RESULTS

- 22 (21.8%) of the reactions were anaphylactic in nature, representing 0.014% incidence of drug-induced anaphylaxis
- 3 reactions required admission to hospital; no fatalities
- Antibiotics were the most commonly implicated medication, accounting for 57 (56.4%) of all reactions
 - penicillins, macrolides, & sulfonamides most frequent
- NSAID idiosyncrasy accounted for 15 (14.9%) of the reactions; Opiates followed with 8 (7.9%)

Table 1: Manifestations of Reactions

Manifestations	Number	Percentage
Skin only (hives, rash, angioedema)	66	64.7%
Anaphylaxis/anaphylactoid	22	21.6%
Skin plus mild GI symptoms	6	5.9%
Respiratory only	3	2.9%
Skin plus mild involvement other system (neurologic, respiratory)	3	2.9%
GI only	1	1.0%
GI and respiratory	1	1.0%

Table 2: Drugs Involved in Reactions

Class (number of reactions)	Drug (number of reactions)	
Antibiotics (57)	Sulphonamides (10)	
	Penicillins (21)	
	Macrolides (11)	
	Cephalosporins(4)	
Fluoroquinolones (3)	Ciprofloxacin(3)	
Tetracyclines (1)	Minocycline(1)	
Others (7)	Vancomycin(2)	
	Metronidazole(1)	
	Nitrofurantoin(1)	
	Antibiotic NOS(1)	
	Multiple ABx(2)	
	NSAIDs (15)	Ibuprofen(7)
		Naproxen(4)
Diclofenac(2)		
ASA(2)		
Celecoxib(1)		
Opiates (8)	Codeine(5)	
	Oxycodone(3)	
Chemotherapeutic Agents (2)	Carboplatin(1)	
	Etoposide(1)	
Immunotherapy (5)	Allergen Immunotherapy(4)	
	Vaccination(1)	
Miscellaneous (12)	Bupropion(4)	
	Phenytoin(1)	
	Amiodarone(1)	
	Auralgan ®(1)	
	Clobetasol(1)	
	Depo-Provera ®(1)	
	Herbal Supplement NOS(1)	
	Lidocaine(1)	
	Misoprostol(1)	

NOS = Not Otherwise Specified

DISCUSSION

- Few systematic studies describe incidence and prevalence of drug hypersensitivity in a general population; Epidemiologic data for allergic/pseudoallergic drug reactions are imprecise, as they are both over- and under-diagnosed
- From other reports, beta-lactam antibiotics are the most frequently reported pharmacologic group implicated, followed by NSAIDs, minor analgesics and other antibiotics; this study found other antibiotics outnumbered NSAIDs and opiates; bupropion was an important single drug source of rash
- Hypersensitivity drug reactions represent up to 1/3 of adverse drug reactions, which can affect 10-15% of hospitalized patients; the incidence of drug allergy in in-patients has been reported at 2.2%
- This study identified an outpatient rate 0.07% of drug hypersensitivity/idiosyncrasy significant enough to prompt an emergency room visit; This may explain why the rate is lower than other reports of 0.13% and 0.30% from Italy, and the U.S., respectively
- A major limitation of this study is the lack of rigorous evaluation of the patient for evidence of true IgE-mediated reactivity, but relied instead on historical and third-party physical examination data

CONCLUSION

- The community incidence of drug hypersensitivity in this study was 0.07%, mostly to antibiotics; the incidence of drug-induced anaphylaxis was 0.014%

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