CRITICAL CARE

LETTER

Accuracy in diagnosis of allergy to β-lactams

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We have read the interesting paper recently published in *Critical Care* [1]. In the issue of pharmacodynamics of β-lactams we missed a particular subject: allergy, subtle but sometimes important in intensive and critical care units since clinicians usually manage patients labelled as 'allergic' without having been studied and based only on clinical history [2]. This creates a health resource problem and leads to use alternative treatments in most cases with a higher cost [3].

We would like to contribute in this issue by describing our experience of reaching a reliable diagnosis in subjects assessed for immediate drug allergy reaction (2001 to 2010) [2]. Diagnosis was supported by a skin test [4], and if skin tests were negative by a single-blind drug challenge test [5] (see Table 1). Nursing and physician staff were present with full resuscitation delivery.

The results are shown in Table 2, with 3,426 total studies involving antibiotics, 4,867 drug challenge tests performed, and 159 positive cases (7%) with β-lactams. Only 114 patients were not studied (refusal or rejected). Unquestionably, the most problematic group of antibiotics was penicillins, including aminopenicillins. It is remarkable that 21 patients with a negative skin test suffered a positive oral drug challenge test, more evident in the latter studied period, possibly explained by the lower sensitivity of the skin test for the most currently used aminopenicillins.

Finally, we would like to encourage allergological studies for an accurate diagnosis of drug allergy, a common problem in clinical practice that can influence the decisions on prescription drugs.

Authors' contributions

JI-S was the main researcher in the fieldwork. IS-M and PP-G collaborated on recruiting the data. RG was responsible at the Drug Allergy Unit (2007 to 2010), and with VM designed most of the current diagnosis protocols. VM was the principal senior investigator, had the original idea, and was responsible at the Drug Allergy Unit (2004 to 2007). All authors collaborated in the fieldwork and approved the final version of the manuscript,

Competing interests

The authors declare that they have no competing interests.

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Table 1. Diagram for diagnosis of penicillin allergy

β-lactam	Skin prick test (mg/ml)	Intradermal (mg/ml)	Provocation test (mg)
Penicillins	PPL 5×10^{-5} mmol/l; MDM 2×10^{-2} mmol/l; penicillin G 20–25[a]	As SPT	5, 25, 100, 250, 500
Aminopenicillins (amoxicillin, ampicillin, cloxacillin)	PPL 5×10^{-5} mmol/l; MDM 2×10^{-2} mmol/l; penicillin G 20–25[a]	As SPT	5, 25, 100, 250, 500
Cephalosporins			
Oral (cefaclor, cefadroxil, cefixime, cefuroxime)	2–100	2[a]	5, 25, 125, 500
Intravenous (cefazolin, ceftriaxone, ceftazidine)	2–100	2[a]	5, 25, 100, 500, 1,000

Diagnosis was supported by skin test (ST) (skin prick and intradermal test) [5,6], and if STs were negative by a single-blind drug challenge test (DChT) with increasing doses of the suspected drug [3,4] every 60 minutes until the usual daily dose was administered or symptoms occurred (some of the symptoms previously described were present) [2]. If symptoms appeared more than 3 hours after the last dose of the DChT, a new DChT was proposed and scheduled. PPL, major determinant of penicillin (Diater Lab, Madrid, Spain); MDM, minor determinant mixture of penicillin (Diater Lab); SPT, skin prick test. [a]From Torres and colleagues [7].

Table 2. Data for drug allergy studies 2001 to 2010

Group	2001 to 2005	2006 to 2010	Total	Percentage
Penicillins	676 (76)	1,329 (75)	2,025 (151)	7.4
Skin prick test	676 (10)	1,329 (08)	(18)	
Intradermal test	676 (62)	1,329 (50)	(112)	
Challenge	604 (4)	1,271 (17)	(21)	
Cephalosporins	24 (2)	160 (3)	184 (5)	2.7
Skin prick test	24 (2)	160 (2)	(4)	
Challenge	22 (0)	158 (1)	(1)	
Others[a]	82 (1)	38 (2)	120 (3)	2.5
Skin prick test	82 (1)	38 (1)	(2)	
Challenge	81 (0)	37 (1)	(1)	
Total	782	1,527	2,309 (159)	6.9

Data presented as total number of patients (number of patients diagnosed positive). Symptoms were not limited only to the skin (urticaria, erythema, angioedema), but also included confusion, collapse, unconsciousness, hypotension, diaphoresis, vomiting, presyncope, dyspnoea, stridor, wheeze, chest/throat tightness, nausea/vomiting, and abdominal pain. [a]Included carbapenems (imipinem, meropenem) and monobactams (aztreonam).