

BRIEF COMMUNICATION

Quality-of-life issues in survivors to anaphylactic reactions to drugs

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Abstract

The aim of this cross-sectional observational study was to explore quality of life and well-being in patients with drug-induced anaphylaxis. Two validated tools were used: the Drug Hypersensitivity Quality-of-Life Questionnaire (DrHy-Q) and the Psychological General Well-Being Index (PGWBI). Sixty-five patients (13 males) underwent data analysis. The mean DrHy-Q score was 62.82 ± 12.1 . Mean PGWBI score was 64.03 ± 17.66 . DrHy-Q score was significantly correlated with PGWBI total score ($r = -0.314$; $P = 0.011$) and with the following domains: Anxiety ($r = -0.260$; $P = 0.036$), Depressed mood ($r = -0.406$; $P = 0.001$), Positive well-being ($r = -0.251$; $P = 0.004$), and General Health ($r = -0.352$; $P = 0.004$). Compared with the Italian reference population, patients had a significantly reduced PGWBI total and domain score. Our results highlight for the first time how impaired HRQoL and distress commonly feature in survivors to anaphylactic reactions to drug.

The term 'drug hypersensitivity' refers to any adverse reaction to drug with a demonstrated immunologic mechanism (1, 2). By clinical criteria, drug hypersensitivity reactions (DHRs) can be classified as immediate (that occur within one hour from the drug intake and are often mediated by IgE antibodies), characterized by urticaria and/or angioedema, rhinitis, bronchospasm, and anaphylactic shock, or nonimmediate (that occur later than one hour after the last drug administration and are often mediated by T cells), characterized by maculopapular exanthems (3). Anaphylaxis is a common problem that affects approximately 0.3% of the European population at some time in their lives (4). DHRs represent 22.4% of cases of anaphylaxis (5) and are responsible for significant morbidity, mortality, and socioeconomic costs (6).

Oude Elberink (7) highlights the paradox of a disease such as anaphylaxis, in which patients experience symptoms only due to exposure to offending allergen, but refer impaired health-related quality of life (HRQoL) due to the memory of a dramatic episode and continuous vigilance to prevent accidental exposure.

Clinical practice suggests that DHR is an experience accompanied by intense emotional content. It is associated with stress and anxiety, because patients are afraid of taking any type of drug and reliving their bad experience.

Unlike other allergic diseases, where HRQoL impairment has been established, no data are now available about the impact of DHRs on patient's experience.

The aim of this study was to explore HRQoL and well-being in patients with anaphylactic shock.

This cross-sectional observational study was conducted between January and June 2013. All subjects from patients seen in the Allergy Units of C.I. Columbus, Rome and Oasi Maria Santissima, Troina, Italy, reporting at least one episode of drug-induced anaphylaxis were invited to participate. Anaphylaxis was diagnosed according to the clinical criteria proposed by Sampson (8).

An exhaustive interview was carried out using a questionnaire (9), and a diagnosis of drug hypersensitivity was made in accordance with European guidelines (5).

Inclusion criteria were as follows: adult (≥ 18); time interval between reaction and allergologic evaluation < 4 months;

comprehension of spoken and written Italian language; and willingness to participate in the study.

Once achieved the informed consent, the patients awaiting their follow-up visit were invited to fill in validated questionnaires.

Health-related quality of life was assessed by means of the Drug Hypersensitivity Quality of Life Questionnaire (DrHy-Q) (10), the only specific HRQoL tool. It is a 15-item questionnaire that met the standards for validity and reliability. Patients used a five-point Likert scale to indicate the extent to which they were bothered by each problem. These responses were converted into scores ranging from 0 to 100, with higher scores corresponding to a worse HRQoL.

The Psychological General Well-Being Index (PGWBI) (11, 12), which provides an index of subjective well-being or distress, was adopted. It consists of 22 items, rated on a 6-point scale, and is grouped into six domains: Anxiety, Depressed mood, Positive well-being, Self-control, General health, and Vitality. The scores for all domains are summarized in a global score, which reaches a maximum of 110 points (the best achievable well-being). The results are grouped according to the well-being level as: positive well-being (score ≥ 96), no distress (≥ 73 and ≤ 95), moderate distress (≥ 60 and ≤ 72), and severe distress (≤ 60) (12).

A descriptive analysis was performed. Bravais–Pearson correlation coefficients between DrHy-Q, PGWBI, and its dimensions were calculated.

The association between patients' PGWBI scores was compared to those of Italian reference population (12) by means of Student's *t*-test. Analyses were performed using IBM SPSS statistical software ver. 21.0 (IBM Corp., Released 2012., IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp.)

A total of 67 eligible patients with a diagnosis of IgE-mediated hypersensitivity to β -lactams were asked to participate

in the study and no one refused. Two patients were subsequently excluded due to incomplete questionnaires, and the analyses were performed on a sample of 65 patients (13 M; mean age 45.9 ± 15.2). All the patients had been treated with epinephrine, steroids, and antihistamines in emergency rooms (and medical records of 59 of them were available). Our 65 patients had experienced a total of 70 episodes of anaphylaxis; the majority (60 patients, 92.30%) had suffered only one reaction, whereas five subjects had had two distinct reactions to different β -lactams.

Forty-five (69.2%) patients had negative histories of allergic or allergy-like diseases, 11 (16.9%) suffered from ocular rhinitis and/or bronchial asthma, 4 (6.2%) from contact dermatitis, 3 (4.6%) from hymenoptera venom allergy, and 2 (3.1%) from food allergy.

The mean DrHy-Q score was 62.82 ± 12.1 . Figure 1 shows the degree of burden for each item. No significant difference has been detected in DrHy-Q score between males and females. No correlation between DrHy-Q and age has been found.

Mean PGWBI score was 64.03 ± 17.66 . According to the well-being level, five patients (7.7%) were classified as positive well-being, 13 (20%) no distress, 21 (32.3%) moderate distress, and 26 (40%) severe distress. DrHy-Q score was significantly correlated with PGWBI total score ($r = -0.314$; $P = 0.011$) and with the following domains: Anxiety ($r = -0.260$; $P = 0.036$), Depressed mood ($r = -0.406$; $P = 0.001$), Positive well-being ($r = -0.251$; $P = 0.004$), and General health ($r = -0.352$; $P = 0.004$).

Compared with the Italian reference population (9), patients had a significantly reduced PGWBI total and domain scores (Table 1).

Anaphylaxis due to drug administration can deeply impact HRQoL and well-being: Intense emotions and everyday life

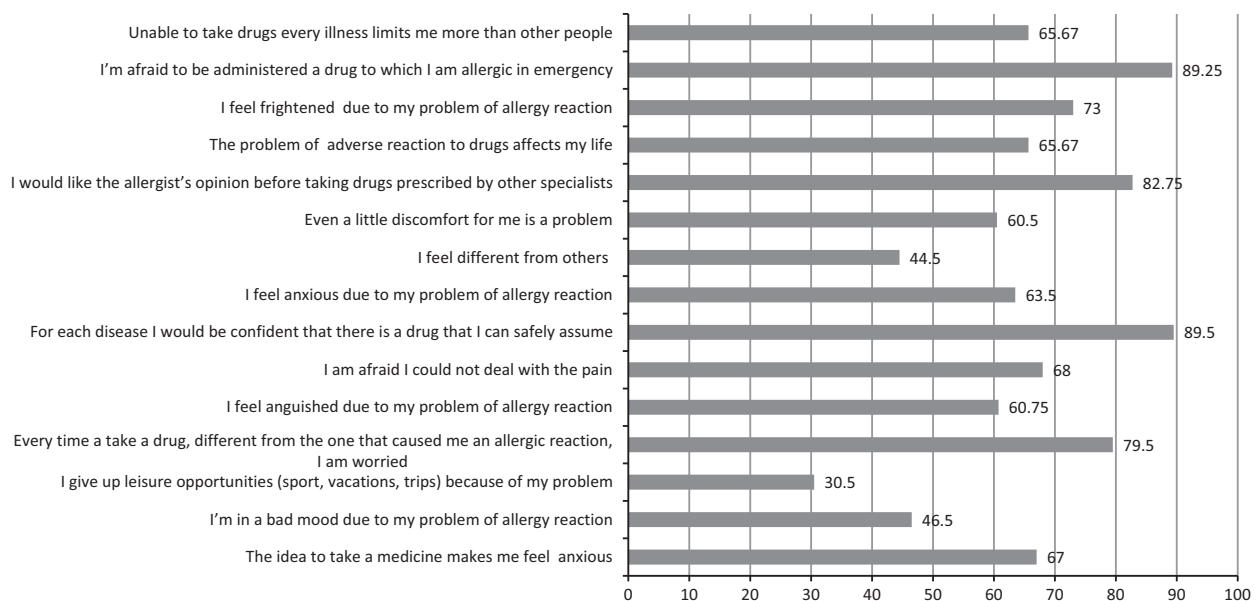


Figure 1 Degree of burden of each DrHy-Q item.

Table 1 Psychological General Well-Being Index (PGWBI) scores of survivors to anaphylactic reactions to drug and Italian reference population (Student's *t*-test)

PGWBI scores	Pts with anaphylactic shock <i>N</i> = 65	Control group <i>N</i> = 1129	<i>P</i> value
	Mean (SD)	Mean (SD)	
Anxiety	13.7 (5.22)	17.3 (4.96)	<0.001
Depressed mood	11.22 (2.81)	12.4 (2.62)	<0.001
Positive well-being	10.45 (3.57)	11.8 (4.02)	<0.001
Self-control	10.02 (3.14)	11.08 (2.69)	<0.001
General health	8.40 (2.99)	11.11 (3.07)	0.003
Vitality	10.78 (3.29)	13.4 (4.00)	0.001
PGWBI total score	64.03 (17.66)	78 (17.89)	<0.001

limitations are added to the memory of a dramatic experience. For the first time, this study explores with validated tools what anaphylaxis means from patient's perspective. The picture that emerges confirms what is detectable in clinical practice.

Patients' HRQoL is significantly altered: The average score of DrHy-Q is 65.82 of 100. The problems experienced by the patients due to the shock are several and occur with a considerable intensity.

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Besides the specific problems, patients' psychological well-being is affected. Over 70% of patients experience a daily distress. Moreover, when compared with the reference sample, the patients have significantly lower scores in all PGWBI scales. The significant correlations between DrHy-Q and PGWBI suggest a relationship between the specific HRQoL impact and the level of well-being.

When interpreting the results of this study, some issues should be considered. First of all, the study was conducted in a single setting and included a limited number of participants. Secondly, due to the cross-sectional nature of the study, no causal inferences can be drawn.

In conclusion, our results highlight for the first time how the experience of anaphylaxis interferes with the patient's HRQoL and well-being, providing data for a better comprehension and management of these patients. Assessing subjective viewpoint with standardized methods can provide useful information to develop individualized management plans (i.e., education, psychological support, psychotherapy) for a better care of patients with anaphylaxis.

Conflicts of interest

The authors declare that they have no potential conflict of interest.