Background: Prevalence and severity of patients admitted to the emergency departments (EDs) for new psychoactive and toxic substances (NPTS) is generally unknown, and in most cases the standard toxicological screening results negative. The underestimation of this phenomenon could have direct implication on early diagnosis and clinical management. A study was conducted through the national EDs network referring to the Pavia Poison Centre (PPC) in order to evaluate the clinical features and the prevalence of analytically confirmed NPTS intoxications.

Methods: All consecutive cases referred to the PPC (Jan 2010 – Aug 2013) for suspected/confirmed substances of abuse poisoning were evaluated (n=5593); cases presenting history for NPTS or atypical clinical pictures possibly unrelated to old/classical drugs of abuse were studied. Cases were assessed for: age, history, acute clinical manifestations, evolution and toxico-analytical investigations. Cocaine, opiates, cannabis, amphetamine/methamphetamine were classified as “old drugs”. Ethanol intoxication and body-packers, together with cases not evaluated in emergency wards (Eds, ICUs) or traumatic or with medic-legal implications, were excluded. Inclusion or exclusion criteria were applied prospectively by PPC clinical toxicologists. In selected cases (“sentinel” cases) a second level lab investigation was performed.

Results: “Sentinel” and “atypical” cases show a progressive increase of the assessed intoxications during the study period (Figure 1). Among 1723 cases of NPTS intoxication presenting atypical clinical pictures (age group and declared substances in Figure 2 and 3), a second level lab investigation was performed in 604/1723 (35%). In 224/604 (37%) NPTS were declared; 30% of patient was unable to report the taken substances. The most common clinical manifestations in “sentinel” cases (n=604) are reported in Figure 4. Eight fatal cases were registered. Laboratory investigations were performed in 91% of cases; 82% of biological samples/products were delivered to PPC by courier (non-urgent analysis). The identified NPTS were: MDMA (50 cases), ketamine (40), synthetic cannabinoids (22), methoxetamine (17), caffeine (17), atropine-scopolamine (15), synthetic cathinones (13), GHB/GBL (6), benzofurans (3), PMA/PMMA (3), 2C-series (2), armine/dimetyltriptamine (1).

Conclusion: The network of EDs referring to PPC and the support of the advanced toxicological analysis are essential for the identification of NPTS-related poisonings: however, this cannot quantify the phenomenon of the use of these substances of abuse. The clinico-toxicological evaluation of identified and lab-confirmed NPTS intoxications permits regulatory actions by the Department for Antidrug Policies (DPA) and Ministry of Health aimed at prevention and control, such as the inclusion of the NPTS in the list of controlled substances (excluding analogues, 22 new molecules has been controlled from 2010).

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