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Clinical report

A prospective study of drug-facilitated sexual assault in Barcelona☆

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ABSTRACT

Background and objective: To determine the frequency and characteristics of suspected drug-facilitated sexual assault (DFSA) among the victims of sexual assault in Barcelona.
Material and methods: Prospective study of every adult consulting an emergency service because of alleged sexual assault and receiving forensic assessment in the city of Barcelona in 2011.
Results: A total of 35 of 114 cases (30.7%) met suspected DFSA criteria. Compared with the other victims, suspected DFSA cases were more likely to experience amnesia, to have been assaulted by night, after a social situation and by a recently acquainted man, to have used alcohol before the assault and to be foreigners. In this group ethanol was detected in blood or urine in 48.4% of analysed cases; their mean back calculated blood alcohol concentration was 2.29 g/L (SD 0.685). Also, at least one central nervous system drug other than ethanol was detected in 60.6%, mainly stimulant drugs of abuse.
Conclusions: Suspected DFSA is frequent among victims of alleged sexual assault in Barcelona nowadays. The depressor substance most commonly encountered is alcohol, which contributes to victims' vulnerability.

Estudio prospectivo de la sumisión química con finalidad sexual en Barcelona

Palabras clave:
Agresión sexual
Sumisión química
Epidemiología
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RESUMEN

Fundamento y objetivo: Determinar la frecuencia y las características de la sospecha de sumisión química (SSQ) entre las víctimas de agresión sexual en Barcelona.
Material y métodos: Estudio prospectivo de personas adultas atendidas en un servicio de urgencias por posible agresión sexual y con valoración médico-forense en la ciudad de Barcelona durante 2011.
Resultados: Se incluyeron 114 casos, de los cuales 35 (30,7%) cumplieron los criterios de SSQ. Este grupo se diferenció del resto en mayor frecuencia de: amnesia, hechos nocturnos y posteriores a actividad social y a consumo de alcohol, agresor recién conocido y origen extranjero. En este grupo se detectó etanol en sangre u orina en el 48,4% de los casos analizados; la etanolemia media estimada en el momento de los hechos fue de 2,29 g/L (DE 0,685). Asimismo, se detectaron otras sustancias psicoactivas en el 60,6%, mayoritariamente drogas de abuso estimulantes.
Conclusiones: La SSQ es frecuente entre las personas atendidas por agresión sexual en Barcelona. La principal sustancia depresora identificada en estos casos es el etanol, que contribuye a la vulnerabilidad de las víctimas.

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Introduction

Drug-facilitated crime is the surreptitious administration of psychoactive substances for criminal purposes.[1] The interest of the scientific community in this type of crime has increased all over the world in response to the alleged increase in its frequency, particularly regarding crimes against sexual freedom, known as drug-facilitated sexual assault (DFSA). Research studies have contributed to the differentiation of *proactive* DFSA in the strict sense versus *opportunistic* DFSA, which involves assault of a victim whose capacities have been impaired by the voluntary consumption of alcohol, drugs, or medication.[3] When there is suspicion of either proactive or opportunistic DFSA, the clinical and forensic response should always be protocolised and multidisciplinary.[4–6]

Although the need to define the magnitude of DFSA and the tendencies of this phenomenon has been emphasised,[4] reviews in Spain have stated an absence of epidemiological studies.[1,2] Research articles on the subject in other countries have focused on suspected DFSA among victims treated by services specialising in sexual assault. Percentages from 6 to 21% have been reported, with an increasing tendency in more recent years. Certain differences have been described between DFSA victims as a group and other sexual assault victims, such as delays in visiting the Emergency Department or a smaller incidence of injuries.[7,8] However, the disparity in the methods used in the different studies, especially in the definition of DFSA, makes it difficult to compare the results.[9]

In turn, DFSA studies based on samples received by toxicology laboratories agree on the frequent discovery of high levels of alcohol and drug abuse, but not other substances allegedly involved in DFSA.[10,11] These studies have their own limitations, as it is impossible for a blood test result to distinguish between voluntary and involuntary consumption.[2] The available data demonstrate that proactive DFSA is still a relatively rare phenomenon with its own criminological characteristics, while opportunistic is an emerging public health issue.[12,13] Recent Spanish studies carried out by the National Institute of Toxicology and Forensic Science (Instituto Nacional de Toxicología y Ciencias Forenses, INTCF) showed similar results to those disclosed by other countries in the field.[14,15]

In this context of methodological diversity, in 2010 our group took on the design of an epidemiological study on DFSA.[16] We decided to apply the methods developed and used by Du Mont et al. (2009, 2010)[8,17] in Canadian emergency departments specialising in sexual assaults. This methodology stands out due to its rigorous definition of DFSA, its prospective nature, and the inclusion of epidemiological and laboratory perspectives.

The purpose of this study was to determine the frequency and characteristics of DFSA in individuals with urgent medical-forensic intervention due to sexual assault in the city of Barcelona during the year 2011.

Material and methods

In the city of Barcelona, like in the rest of Spain, the medical-forensic assessment of sexual assault cases is carried out in coordination with health care services. Typically, a hospital emergency department notifies the Court by telephone when a patient is admitted who has suffered sexual assault, and a Judge orders medical-forensic intervention. The on-call pathologist then goes from the Court to the health care centre, where the intervention is carried out according to protocol.[18]

In our city, the reference centre for adult victims of sexual assault is the *Hospital Clínic* of Barcelona (HCB), which is located downtown, although victims are sometimes seen at other hospitals. Underage individuals are usually treated at other health care centres in the metropolitan area. Most individuals requiring care following a sexual assault at the HCB also require medical-forensic assessment, and no differences have been described between groups with or without this kind of assessment.[19,20]

Design and definitions

Prospective research on an individual basis was carried out from January 1, 2011 to December 31, 2011 in the city of Barcelona. The research was approved by the Research and Teaching Commission of the *Institut de Medicina Legal de Catalunya* (IMLC).

The inclusion criteria were: individuals treated at emergency departments in the city following a sexual assault and who underwent medical-forensic assessment by the on-call service. The exclusion criteria were: individuals under 18 years of age or the absence of valid reasons to suspect sexual crime.

Suspected DFSA was defined according to the criteria by Du Mont et al. (2009): suspicion by the victim of having been "drugged," presence of at least one of the 16 symptoms associated with DFSA and a valid reason for suspecting sexual crime.[8] Patients were classified as suspected DFSA if they met the criteria. Otherwise, they were classified as non-DFSA.

Data collection and handling

Information sources included the standardised document for reporting sexual assaults issued by the IMLC, request forms for biology and toxicology analyses, and the biology and toxicology reports from the *Servei of Laboratori Forense* (SLF) of the IMLC or the Barcelona Department of the INTCF.

Each patient was assessed according to the IMLC protocol for sexual assaults, which includes obtaining sociodemographic data, medical history and factual circumstances, as well as a physical examination, assessment of mental and gynaecological condition, and a request for biological investigation of traces of semen, and blood and/or urine toxicology analyses. Since the beginning of the study, a new form has been created for requesting a toxicological analysis from the SLF of the IMLC, which expressly includes detailed information regarding suspected DFSA.[16]

The data collection forms for the study were completed by three trained data encoders in fortnightly joint sessions. The detailed definition of each variable included and the encoding methods used have been previously described.[16]

Chemical toxicology study

The toxicology study of blood and/or urine samples was done by the SLF of the IMLC.[16] In a minority of cases, it was carried out at the INTCF.[5] In the initial screening, urine samples were treated according to the methods established after centrifugation, and processed in the AxSYM® analyser (Abbott Laboratories, North Chicago, IL, U.S.A.), based on fluorescence polarisation immunoassay. In the case of alcohol, the analyses were performed via headspace gas chromatography and flame ionisation detector (chromatograph Agilent 6890N with automatic headspace sampler 61888; Agilent Technologies, Santa Clara, CA, U.S.A.). The range of detection and quantification was 0.098–4.740 g/L. The second method used was gas chromatography coupled with mass spectrometry (4000 GC Varian/3800 MS Varian; Varian Medical Systems, Palo Alto, CA, U.S.A.). The technique required prior extraction of liquid/liquid (LEP Cartridge Varian Certify) in the case of urine samples, and extraction in solid phase (SPE Cartridge Varian Certify) in the case of blood samples. When the method for analysing samples required derivatisation, N,O-bis (trimethylsilyl)-trifluoroacetamide and trimethylchlorosilane were used (Supelco Inc., Bellefonte, PA, U.S.A.). Suspected DFSA samples were analysed