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Self medication in the age of connectivity and its risks - the case report

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Abstract Introduction: Public healthcare systems throughout the world are strained by demographic changes, soaring costs and insufficient resources. This can negatively affect access to health services, which forces patients to seek other treatment options. Websites and online forums have become one of the most common sources of health advice, with online medicine trade burgeoning as well. However, while the internet provides vast knowledge database, using unverified advice or product can have dangerous consequences. We present a patient with acute amphetamine poisoning, caused by ingestion of substance marketed online as weight loss drug.

Aim of study: to discuss potential risks and problems of using online advice and products in self medication.

Results: Our patient, the 36 year old female, was admitted to Department of Toxicology and Cardiology with symptoms suggestive of poisoning of some kind. She admitted to using a weight- loss medication throughout the last month, in increasing dosages. The drug was bought from online trading platform. She lost 8 kilograms of body weight through this period. Subsequently, she noticed some disturbing symptoms, including dystonia movements of limbs, paresthesia in right half of the body and blurred vision. Episodes of tachycardia were reported as well. On admission, the patient was weakened and mildly depressed. She reported not eating anything for the last 2 days. Toxicological examination revealed the presence of psychoactive substances in the urine- amphetamine at 7800 ng/ml and LSD at 1,08ng/ml. Our patient was consulted by psychiatrist and psychologist. Fluid therapy was applied, along with Relanium, low molecular weight heparin, Dexaven and Polprazol. Due to elevated blood pressure, a 24-hour blood pressure measurement was performed. Next, hypotensive therapy was administered. The patient’s condition improved and she was discharged from the

hospital after 4 days, with scheduled control in ambulatory setting and recommendation of beginning the psychotherapy.
Conclusions: Online health advice and products can be dangerous if used inappropriately. A focus on education and provision of freely available, high quality medical information can make it safe and useful complement to healthcare systems throughout the world. Appropriate systems controlling online medicine distribution should also be instituted, with patients' safety and wellbeing as prime goals.

Key words: **self medication; illicit medicine trade; poisoning**

Introduction

Public healthcare systems throughout the world are increasingly strained by demographic changes, soaring costs and insufficient resources. This can negatively affect access to health services, which forces patients, especially those less well off, to seek other treatment options [1]. Two of the most visible effects of these pressures are the rapid rise of popularity of alternative (e.g. chinese) medicine and self medication using commonly available resources [2, 3]. Websites and online forums have become one of the most common sources of health advice, with online medicine trade burgeoning as well [4, 5, 7]. However, while the internet provides vast knowledge database helpful for self medication, using unverified advice or product can have very dangerous consequences [6]. Hereby, we present a patient with acute amphetamine poisoning, caused by ingestion of substance marketed online as weight loss drug.

Case report

Our patient, the 36 year old female, was admitted to Department of Toxicology and Cardiology with symptoms suggestive of poisoning of some kind. She admitted to using a weight- loss medication- white powder of unknown chemical composition- throughout the last month, in increasing dosages. The drug was bought from online trading platform. She lost 8 kilograms of body weight through this period. Lately, she noticed some disturbing symptoms- insomnia, dystonic movements of limbs, paresthesia in right half of the body, blurred vision and eye pain. Episodes of tachycardia were reported as well. On admission, the patient was

weakened and mildly depressed. She reported not eating anything for the last 2 days. While most cardiovascular parameters were within reference range (apart from elevated blood pressure at 140/93 mmHg), toxicological examination revealed the presence of psychoactive substances in the urine- amphetamine at 7800 ng/ml and LSD at 1,08ng/ml, respectively. Our patient was consulted by psychiatrist and psychologist; while there was no immediate need for psychiatric therapy, our patient did show low mood and very low self esteem. Fluid therapy was applied, along with the following medications: Relanium, low molecular weight heparin, Dexaven, Polprazol. Due to elevated blood pressure on admission, a 24-hour blood pressure measurement was performed. Subsequently, hypotensive therapy was administered. The patient's condition improved and she was discharged from the hospital after 4 days, with scheduled control in ambulatory setting and recommendation of beginning the psychotherapy.

Discussion

Self diagnosis using information found on the internet is becoming common practice among patients, especially in countries with poor access to healthcare. However, this development is not matched by increased health literacy among many users, which surely is a cause for concern [8]. The increasing importance of self diagnosis and medication is accompanied by burgeoning online medicine trade [7]. It is estimated that almost thirty five thousand of online pharmacies are now working globally, with most of them classified as "illicit" or "rogue" pharmacies (breaking national and/or international laws and regulations). Medical internet trading platforms have some advantages shared by other online businesses, like lower costs, increased privacy, convenience. The price of these benefits is much lower security and high probability of fraud. Such companies often use misleading or illegal sale tactics, with fraudulent health claims and selling prescription drugs without actual prescriptions being the most common blunders [7]. When we add to this picture a huge industry of substandard and counterfeit drugs produced primarily for online market- a problem mentioned in WHO reports- a clear and present danger for patients' health becomes obvious [7, 9]. According to European Alliance for Access to Safe Medicines, even lifesaving drugs for treating cancer or serious cardiovascular system diseases are now counterfeited, with substitutes sold in online markets [9]. Some studies have also found undeclared ingredients in dietary supplements [7]. As the case of our patient shows, even supposedly harmless products can contain powerful and dangerous drugs. Worse still, some of counterfeited medicines can contain highly toxic substances like rat poison [10]. Aside from those health risks, there are cybersecurity threats and privacy issues as well. Most of the illicit online pharmacies are integrated in wider networks of criminal activity, including data phishing and fraudulent financial schemes [7].

Considering large risks stemming from self medication using online resources and products, what can be done to mitigate them? In case of health advice, the answer is relatively simple- we should focus on patient's education and provide them with accurate, up-to-date information about their illness. A concerted effort from government, healthcare providers and academia could provide robust and easily accessible health knowledge database [7, 11]. Dealing with illicit medicine trade will not be so easy. Rogue online pharmacies flourish in

anonymous, decentralized digital environment. This problem is compounded by ineffective regulation and governance of global internet network [7]. The fact that drug counterfeiting is also hugely profitable business makes those problems even harder [10, 12]. Current solutions include judicial action against those pharmacies that break the law, coordinated crackdown on international illicit medicine trade (like "Operation Pangea" of Interpol) and outright bans on online sale of controlled substances (an approach taken by U.S. government). However, these efforts proved only mildly effective to date. More subtle solutions, like online verification schemes, certification systems and generic top level domain names have been successfully used in other industries with online trade problems, and could prove the key to safe online medicine market in the future [7].

Conclusions

Online health advice and products can be dangerous if used inappropriately. A focus on education and provision of freely available, high quality medical information can make it safe and useful complement to healthcare systems throughout the world. Appropriate systems controlling online medicine distribution should also be instituted, with patients' safety and wellbeing as guiding principles.

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