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Pharmaceutical Intervention at Community Level: Report of a Clinical Case due to Lychee Intoxication

Ana Luisa Robles-Piedras[1]*, Urias Bautista-Sánchez[1,2], Alejandro Chehue-Romero[1] and Elena Guadalupe Olvera-Hernández[1]

[1]Área Académica de Farmacia Instituto de Ciencias de la Salud Universidad Autónoma del Estado de Hidalgo Circuito Ex-Hacienda La Concepción, Km. 1.5 San Agustín Tlaxiaca, Hidalgo. México c.p. 42160.
[2]Exu Farma Departamento de Atención Farmacéutica San Agustín Tlaxiaca, Hidalgo. México c.p. 42163.
*Corresponding Author Email: roblesa@uaeh.edu.mx

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We present a clinical case of a 3-year-old male patient with signs and symptoms of a diagnosis of unidentified food poisoning. In this scenario the community pharmacist's job consisted of collaboratively work with the doctor, to ensure that the patient's medication was safe, with the aim of detecting drug-related problems or interactions with food, and avoiding negative outcomes associated with medication. The pharmacist applied the methodology described by DADER, for the pharmaceutical care approach and through the intervention, it was possible to establish that the poisoning was due to the intake of lychees. To date, in Mexico there are no reports of litchi poisoning in children, on the other hand, the community pharmacy is an emerging area, hence these types of interventions are scarce.

Keywords: Community Pharmacy; Intoxication; Lychee; Pharmaceutical Intervention.

An intoxicated person may show a set of signs and symptoms as a consequence of the presence of an exogenous compound that, in sufficient quantity, may even cause damage to the organism. It is known that many substances are potentially toxic depending on the dose, some of them only require a very small dose, but there are others that require a large amount to produce adverse reactions. This can lead to a health problem, which may even need to be addressed at the first level of healthcare. Under any scenario, the community pharmacist's job consists of working collaboratively with the doctor to ensure that the patient's medication is safe, and to this end follows different guidelines that allow better control over the patient's medication, all with the aim of detecting drug-related problems (DRP) or interactions with food, and avoiding negative outcomes associated with medication (NME). Suitably, patients attending primary care and community pharmacies should be included in the pharmacotherapeutic follow-up service, in order to achieve the correct use of the prescribed drugs, and when necessary, the pharmacist should communicate with the treating physician so that in the event that a DRP or NMR is detected, a

correct dispensing of the drugs is pursued to ensure their proper use, in accordance with the principles of necessity, effectiveness and safety. This case report presents the circumstances and toxicological findings attributed to the ingestion of lychee fruit in a minor, with a medical diagnosis of undifferentiated intoxication.

Case Report

This clinical case presents a 3-year-old male patient with the following signs and symptoms: rash, diaphoresis, somnolence, dry mucous membranes, loss of concentration, exhaustion, fever, HR 87 per minute, and FR 23 per minute, in addition to loss of consciousness before arriving at the office. Due to the signs and symptoms shown, the doctor made a diagnosis of unidentified food poisoning, and empirical treatment was started with Loratadine at a dose of 2 mg every 24 hours, for 5 days, pending laboratory tests of serum glucose and C-reactive protein (CRP). At the same time, the physician in charge tells the patient's mother to go to the pharmacist so that a pharmaceutical care plan can be drawn up.

The mother goes to the pharmacist's office the next day after the medical consultation, and there, the methodology described by DADER[1] for the pharmaceutical care approach is applied. In the interview conducted by the (community) pharmacist, when inquiring about the patient's hygienic dietary habits, the patient's mother refers that the child consumed about ¼ kg of lychees as the only food (approximately 12 pieces) throughout the day. During the interview, it was established that in the previous day's diet no food out of the ordinary was found in the patient's diet, so we proceeded to investigate whether there is evidence of any component of the fruit that generates any sign or symptom such as those presented by the patient, finding reports of intoxications by this fruit in other countries[2-4]. When the pharmacist and the treating physician discuss the information found, a joint decision is taken to measure the blood glucose concentration with a test strip, and it is colored in the range of 60-80 mg/dL. Based on this result, at that moment the pharmaceutical intervention is performed, conciliating with the physician about a potential food poisoning due to excessive intake of lychees, recommending the use of Cetirizine at a dose of 1.25 mg every 8 hours for 3 days (instead of loratadine), in addition to a gruel containing 5 g of cornstarch every 8 hours and 15 mg activated charcoal orally at that time. The patient is discharged and an appointment is made 5 days later for the pharmaceutical consultation, remembering the indication to perform the biochemical tests of serum glucose and CRP, data that will help in the follow-up of the patient's treatment. At the second appointment with the doctor, the mother comes with the results of the biochemical laboratory tests, and it is found that the glucose levels have normalized, as well as the other parameters requested: serum glucose of 75 mg/dL and CRP of 1.6 mg/dL.

DISCUSSION

Although lychee intake is relatively common, there is a limited amount of data on acute toxicity or hospital admissions that may occur after consumption of this fruit, mainly in the Latin American region. Studies reported in other countries indicate that the reason for the deaths is due to two substances, Hypoglycine A and Methylcyclopropylglycine, which inhibit gluconeogenesis, that is, the metabolic pathway by which new glucose is produced in the liver[4-6]. Hypoglycine and methylcyclopropylglycine intoxication has been reported as a health problem worldwide since 1976, and for at least a century, there are reports of the disease known as Jamaica Fever, which is characterized by exactly the same symptoms from eating a fruit called Ackee, from the same family as lychees, horse chestnut and others of the species; Likewise, the general state of health of the patient plays an important role, since consuming these two substances on an empty stomach, and not eating anything else afterwards, facilitates intoxication due to a lack of glycogen, an energy reserve polysaccharide that is transformed into glucose when needed. On the other hand, the clinical diagnosis of patients intoxicated by the ingestion of fruits can be difficult to establish[5-8].

In the clinical case described here, with the first treatment prescribed by the physician to treat intoxication caused by lychee consumption, the patient presented little response to treatment with loratadine, because the prescribed dose was at subtherapeutic doses; although loratadine

and cetirizine belong to the second-generation selective antagonists, histamine H1 receptors, the difference between these two drugs lies in the time of onset of their pharmacological effect, since that of cetirizine is 1-2 hours, compared to that of loratadine (4-6 hours)[9] so the drug that acts in the shortest time is recommended. Once the DADER methodology was applied, it was established that the DRP detected was due to the ineffectiveness of the first prescribed drug, which, as a consequence, led to an RNM, based on the poor response to intoxication after treatment. After administration of cetirizine, six hours after reconsidering the dosage, the patient's signs and symptoms of intoxication improved considerably.

CONCLUSION

The DADER method consists of a series of questions that help identify DRP; at the community pharmacy level, it helps to evaluate the pharmacological history. In this clinical case, this method was applied as a substantial tool for the pharmacist to establish the appropriateness of the prescription. The pharmacist's intervention at the community level is fundamental to evaluate and resolve the cause of medication ineffectiveness, since it guides and supports the medical staff regarding a possible dose adjustment or type of medication, and to improve the patient's pharmacotherapy. Pharmacists have the responsibility to meet the patient's medication-related needs. With the case described here and the appropriate pharmaceutical intervention, it was possible to detect, prevent and resolve the DRP and NMR. This type of action implies a continuous, systematized and documented commitment, collaborating with the patient and the rest of the health care team to achieve concrete results that improve the quality of life of patients. In Mexico there are no studies or guides that indicate the management of lychee poisoning; However, in countries like India, the consumption of this fruit is monitored, mainly in the case of the paediatric population, due to the hypoglycemic effects that this fruit can cause. It is important to reinforce the presence of professional pharmacists at the community level, something that has yet to be achieved in Mexico.

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Conflict of interest

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