wjpmr, 2021,7(2), 13-15

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Review Article

ISSN 2455-3301

WJPMR

A CASE DELAYED ABOUT FUNGAL INTOXICATION AND THE LITERATURE REVIEW

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DOI: https://doi.org/10.17605/OSF.IO/XWH6D

Article Received on 30/11/2020 **Article Revised on 20/12/2020** **Article Accepted on 10/01/2021**

ABSTRACT

With the begining of spring and autumn months, the cases of fungal poisoning in emergency services have increased. Most of the poisonings have occured due to the consumption of wild mushrooms in yards and open areas. Eating of the mushrooms can cause not only to some slight symptoms such as nausea and vomiting but also to serious symptoms like renal and liver failures. Appeaance period of these symptoms and findings vary by the kind of toxin in the mushroom. In our study, it is told a case that consulted the epicenter due to the symptoms of nausea and vomiting but increased in the liver function test (LFT), were diagnosed lately and transferred to the intense care unit and treated there.

KEYWIORDS: Fungal poisoning. Silivbrum. Increasing in the liver function test.

INTRODUCTION

In out county Turkey, most of the fungal posionings have occured due to the consumption of wild mushrooms that picked from the mountains, uncoonsciously. In the mountain, it is thought that there are approximately 5000 fungal species and 50-100 species of then are known as toxic for people. The species of fungal have a wide range of toxins. Therefore, it is useful to do a classification that the clinical features are at the forefront. The toxins can be examined in 7 main groups according to the clinical findings of toxins that responsible for the fungal poisonings. These are: amatoxins (cyclopeptide), gyromitrin, muscarine, coprine, ibotenic acid, psilocybin and orellanine.[7]

1. Fungal including cyclopeptide

The most dangerous toxic fungal, Amanita phalloides, is in this group. The patients who have fungal poisoning can consult the emergency services with some complaints such as nausea, vomiting, nuisance and diarrhea at first. These patients may be get diagnıosis of gastroenteritis and then consult again with a serious clinical table within days. These late symptoms are the typical for cyclopeptide posionings.

2. Fungal including gyromitrin

Gyromita esculenta is a typical example for this group. Existing cooking methods lyses the toxin, however, inhaling of the gasses in the cooking fume can lead to posioning. Within 5-10 hours after the oonsumption of these mushrooms, the toxicity symptoms begin to occur. These symptoms can be weakness and muscle cramps as well as nausea, vomiting, nuisance and diarrhea. The symptoms generally are limited to gastrointestinal disorder and the patients typically get better within 2-6 days.

3. Fungal including coprine

The most common fungal of this group is Coprinus atrementarius and it is known as parasol mushroom. Coprine is amino acid and L aminosiclopronol including metabolite has an effect like disulfram. Acetaldehyde accumulates as a result of inhibition of absorption of acetaldehyde dehydrogenase of L-aminosiclopronol and correspondingly, some posioning symptoms such as tachycardia, flushing, nascea and vomiting occur.

These symptoms disappear automatically withing a few hours. These kind of mushrooms causes to death rarely.

4. Fungal including Ibotenic Asid and Muscimol

These mushrooms belong to Amanita family. Most of the patients consume these mushrooms because they want to experience hallucination. In case of over consuming of them, somnolance, dizziness, hallucination and delirium symptoms occur depending on gabaergic effects within 0,5-2 hours. Besides; myoclonic jerks, seizures and other neurological findings can be seen depending on glutamatergic effects.[8]

5. Fungal including Muscarine

Fungal including Muscarine are the members of Clitocybe and Inocybe families. Fungal including Muscarine take effect by connecting acetylcholine receptors.

6. Fungal including Orelline and Orellanine

Fungal in this group causes to renal failure by leading to cannulate damages, interstitial nephritis and fibrosis in the renal.[11]

The first sympyoms are headache, cold, inaccetence, nausea and gastritis within 24-36 hours after the consumption. The oliguric renal failure may occur after the weeks from the first symptoms.

7. Fungal including psilocybin

These fungal known as magic mushrooms by people live in the warm and humid areas. These fungal are popular because of their hallucinogen effects, and their toxicity are very common.[11] Their effects begin within a hour after the consumption. After the oral intake, tachycardia, anxiety, tremor mydriasis, ataxia, hypercinesia and hallucination may occur.[10] They cause to rarely renal damages, seizures and cardiopulmonary arrest.[11,12]

The Case

A 46- age woman began to feel nauseous and vomit in nearly 8 hours after eating mushroom with her hurband 5 days ago. The patient's complaints continued and then she went to Family Health Center. There, she were discharged after applying hydration with intravenous fluid. She consulted to emergency service in the province public hospital because her complaints continued. She was transferred to the public hospital after the determination of increase in liver function test (LFT) as a result of the examinations.

In her detailed medical history, it is learned that her complaints began after eating mushroom 5 days ago. The doctors consulted Distant Training Application and Research Center (DTARC) for the patient. It is advised to begin sibilium, penicilin g and assist infusion and intense care follow-up. Legalon-Sıl (350mg silibinin/bottle) loading dose was given to the patient in 5mg/kg 250 ml %9 NACL in a hour, by dividing the maintenance dose four equal parts. Each dose (250 ml %0,9 NACL) was given to the patient within 2 hours. Penicillin G was started at 1 million U / Kg / day. Assit infusion was given to the patient 150mg/kg in a hour, 50mg/kg in four hours an then 100mg/kg including %5 dextrose.

The patient was accepted to the intense care unit of our university because there is no vacancy in public hospital. The patient was concious, cooperative, TA was: 110/60 mmHG, SPO2: 100, Nb: 85/Min Fever: 36.5 ^{0}C GKS: E4M6V5. She has no additional disease and did not take any medicine regularly. Her treatment continued in line with the advices of DTARC. During her treatment in our clinic, there was no pathological findings. Her examinations during staying in epicenter and intense care unit was shown in Table I.

The patient was consulted to gastroenterology after her liver eznymes decreased and vital findings became normal. The patient who did not need to intense care was discharged with the advice of gastroenterology unit.

DISCUSSION

Fungal posionings are common in certain periods due to the consumption of fungal that were picked up from the yards and open areas, in especially in warm and humid regions. Fungal may effect the gastrointestinal system, central nervous system, liver and renal when its especially wild species are consumed. In our case, By doing further examination after determining of nausea, vomiting and increase in liver function test, it is seen that the case is a fungal posioning. The recent-onset symptoms in fungal poisonings are: nuisance, nausea, vomiting, diarrhea, tachycardia, hyperglycemia, hipotension, and alienation of electrolyte. In early period (within 6 hours), in fungal posionings which show some sympyoms, prognosis are generally suitable and symptomatic treatment are sufficient. In our case; IV hydration was applied to the patient because the patient feel nausea and vomiting after nearly 8 hours from the consumption of mushroom. Then, further examination was made because of there is no regression in the symptoms.

It is advised that the asemptomatic patients who consulted to the emergency service should be follow-up at least by the four hour. If the patient is still asemptomatic, she/he can be followed-up in his/her home. However, it is advised that the patient should be treated and followed-up in the hospital if it is seen that the mushrooms are toxic and there are some symptoms.

The stomach lavage should be applied for the patients who consulted in the early period after the consumption of mushroom. During this time, toxicological analysis of the stomach can be made. Following the stomach lavage, it is advised that the activated carbon should be give in more than one doze (the first doze 1g/kg and 0,5 g/kg repetitive doze). Activated carbon inhibit the toxins to reabsorb by joining the enterohepatic cycle. In this case, because the diagnosis was made 5 days after the consumption of mushroom, the treatments of activated carbon and stomach lavage was not applied. The patient consulted the famliy health center because of her complaints such as nausea and vomiting within 6-8 hours after the consumption of mushroom and there were no relief in the symptoms. She did not benefit from the treatment and then consulted to emergency service. In her detailed medical history, it was learned that the symptoms began occur in 6-8 hours after she consumed the mushrooms that she picked up with her husband 5 days ago.

However, her husband had no complaint and patological laboratory findings. It was determined that the mushroom they ate is Gyromita esculenta according to the patient's relative and fungal posioning treatment started. These mushrooms are located under the pine cones in winter and easily distinguished because of their similarity to the human brain. They are responsible for the %1 of common fungal poisonings. Existing cooking methods lyses the toxin, however, inhaling of the gasses in the cooking fume can lead to posioning.[8] Within 5-10 hours after the consumption of these mushrooms, the toxicity symptoms begin to occur. These symptoms can be weakness and muscle cramps as well as nausea, vomiting, nuisance and diarrhea. The symptoms generally are limited to gastrointestinal disorder and the patients typically get better within 2-6 days. Delirium, stupor, convulsions and coma are rarely seen in the patients. There is no laboratory test for the early diagnosis.[9] In our patient, the toxicity findings were seen, and these were nausea and vomiting. There were no delirium, stupor and coma findings.

However, the symptoms of increasing in liver funtion test and headache were remarkable. The patient's husband had no complaint and patological laboratory findings. Therefore, it is thought that she inhaled the gasses from the fume when cooking the mushrooms and it caused to intoxication. That's why, the headache symptom arised from the toxic gas inhalation in the patient. With the advice of DTARC, the treatment of Sibilium, penicilin G and assist infusion was applied to the patient.

(Slymarin); it is a derivativ of water-soluble silimarin and a molecule that inhibit uptaking of hepatocytet by amatoxin.[13,14] Penicilin G; Similar to silibin, it is thought to be effective in reducing the uptake of amanite by the liver, as well as separating amanite from albumin, binding circulating amatoxins, and inhibiting the binding of amanite to RNA polymerase. Although its hepatoprotective effect has not been clearly defined, it is recommended to use it in high doses (300 thousand – 1 million units / kg / day).[8,13,15,16] Treatment of penicillin and silibinin has been supported by several series of cases, but prospective controlled studies about the use of them are not yet available.[15]

N-acetylcysteine (NAC); classically used in paracetamol poisoning. NAC has been shown to be effective by reducing glutathione content in hepatocytes exposed to amanitis and is recommended for use as a hepatocyte protector.[13,14]

Methods such as hemodialysis, hemoperfusion, plasma exchange are widely used for toxin eimination and there are still centers that use these methods today. It is reported that hemoperfusion and hemodialysis applied within the first 24 hours after consumption of mushroom may help toxin elimination.[10,17,18] Our patient did not require hemoperfusion or hemodialysis because of late diagnosis.

Although all treatment options are considered, liver transplantation should be planned if complete clinical improvement is not achieved in the patient.[14]

Outcome

Fungal poisoning is an important health problem with serious poisoning cases reported from almost every region in our country. In addition to the current treatment methods for such poisonings, prevention of poisoning and increasing awareness may contribute to the reduction of mortality. Liver transplantation can be life-saving in case of severe liver failure due to fungal poisoning.

The number of specialized health centers with the necessary medical treatment for this type of poisoning should be increased. Adequate control of the sale of mushrooms and raising public awareness on this issue can reduce the deaths associated with this type of poisoning.