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Survival after Strychnine Poisoning: A Case Report.

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ABSTRACT

Strychnine poisoning has a very uncommon occurence. Strychnine, brucine and loganin constitue the active principles of Strychnine nux vomica. Nowadays the poisoning is most commonly due to adulteration with narcotics. Hereby we present a case of 23 year old male, who had consumed nux vomica seeds accidentally (made decoction and he drank it) and developed abnormal behaviour, stiffness, hyper-reflexia and was treated conservatively with anti convulsants (symptomatic management). Eventually he survived and got discharged after 8 days of admission.

Keywords: Anti-convulsant, Hyper-reflexia, Poisoning, Strychnine.

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INTRODUCTION

Strychnine is an alkaloid which is obtained from seeds of tree Strychnos nux vomica. It is first used as a rodenticide in Germany in early 16th century. It is still used as adulterant in street drugs such as amphetamines, cocaine, heroin [1]. Strychnos nux-vomica L. is a highly toxic herbal preparation; it is an important ingredient of many traditional Chinese medicines [2]. This alkaloid exerts an excitatory effect on the central nervous system by inhibiting the glycine uptake at synapses, specifically in the ventral horns of the spinal cord; it would explain the need of minimal peripheral sensory stimulation to trigger diffuse muscle contractions[3]. It results in increased neuronal activity and excitability, leading to increased muscular activity [3].

Hereby we present a case of 23 year old male, who had a history of accidental consumption of nux vomica seeds (made decoction and drank it) but eventually he survived.

Case History

A 23 year old male had consumed Strychnos nux vomica seeds accidentally (Made decoction and drank it) by mistaking it for other herb seeds. He developed altered mental status for which he was referred to our hospital in view of further management. On examination he was conscious, oriented, vitals were stable, no evidence of breathlessness but he was found to have hyper-reflexia, stiffness in both the upper limbs and lower limbs.

The investigations revealed elevated levels of creatinine phosphokinase and initially the renal parameters were elevated but subsequently corrected with conservative management. He was treated with anti-convulsants conservatively. His symptoms of hyper-reflexia and stiffness were regressing and on 8th day of post admission he was discharged.

DISCUSSION

Strychnine is an alkaloid obtained from the seeds of Strychnos plants. These plants are from the family Loganiaceae, very common in South India, the botanical name is Strychnos nux vomica, commonly called as dog buttons. The seeds are most toxic part of the tree. The seeds are grayish brown, disc shaped, hard, flat, little convex on one side and concave on the other side [4]. The presence of a shiny hard pericarp with radiating silky fibres differentiates it from other seeds [5].

There are three active principles of which strychnine and brucine are alkaloids whereas loganin is a glycoside. The bark, wood and leaves contain only brucine. It dissolves very sparingly in water or ether but dissolves well in alcohol (90%) and benzene and readily in chloroform [5]. Strychnine has been used as a rodenticide and to kill stray dogs (hence the name Dog buttons) though it is of no therapeutic value [6]. Strychnine displays little protein binding and is rapidly redistributed from the blood to the tissues. Its volume of distribution is 13 L/kg [7-9]. Elimination follows first-order kinetics with an elimination half-life is approximately 10 to 16 hours [10-12].

Strychnine prevents the uptake of glycine at inhibitory synapses, especially in the ventral horns (anterior horn cells) of the spinal cord. It results in the competitive antagonism of the inhibitory neurotransmitter at the post-synaptic spinal cord motor neuron. There is a net excitatory effect, and minimal sensory stimulation can set off powerful muscle contractions [4]. The usual symptom is feeling of apprehension, muscle twitching, spasms followed by overwhelming convulsions [4]. The differentiating feature is in between spasms and convulsions there will be complete relaxation of the muscles. The patient will have clear sesorium in between the episodes of convulsions [4]. Other clinical features are Risus sardonicus, opisthotonus, emprosthotonus, pleurosthotonus, trismus (lock jaw) [4,5,13].

The differentials to this poisoning are tetanus, rabies, meningitis, hysteria etc [4]. The seeds are non poisonous if they are consumed as it is because of the presence of the pericarp. The differentiating feature from tetanus will be absence of trauma and fever prior to the onset of symptoms [13]. The usual fatal dose is 30 – 50 gms of strychnine or 1-3 gms of Strychnos seeds [4]. Fatal period is approximately 30 minutes – 2 days

[13]. Death is usually due to respiratory muscle paralysis. In severe cases the patient is kept in a dark and silent room to avoid stimulus to cause the symptoms to occur [5].

In our case the patient had survived for 8 days after drinking the decoction made out of Strychnos seeds. Though he presented with mild symptoms like stiffness in the extremities and exaggerated deep tendon reflexes he was managed conservatively with diazepam (anti convulsant) and symptomatic approach. His renal parameters which were initially high were normal at the time of discharge. Though it is an accidental case of strychnine poisoning (As claimed by the patient) we will not be able to comment on the manner only by the patient's version of history. Probably we should look forward to enquire and counsel the relatives and friends of him to keep a track on him and to avoid such occurrences.

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