

Pretty (effective) in Pink.

Digoxin-specific Antibody for Pink Oleander Poisoning



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INTRODUCTION

- Cardiac glycoside toxicity is a type of poisoning that occurs in people who overdose on the medication digoxin or in the ingestion of plants such as oleander that contain cardiac glycosides.
- An overdose of cardiac glycoside is characterised by GI distress, hyperkalemia and life-threatening dysrhythmias.^{1,2}
- Severe toxicity requires hospitalisation and the need for DigiFab as definitive treatment.
- Digoxin antibodies found in DigiFab are digoxin specific Fab fragments. The antibody fragments form complexes with the digoxin molecules in the circulation, removing it from its site of action. These complexes are then excreted in the urine.^{3,4,5}

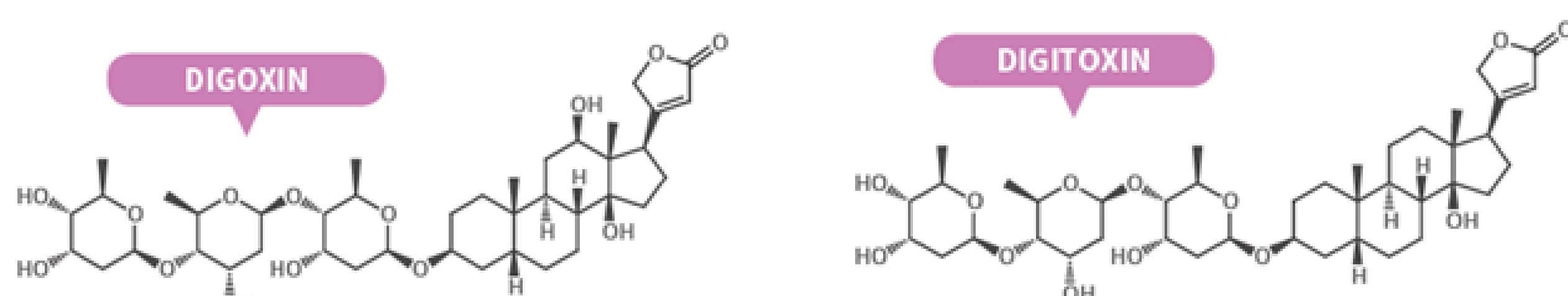


CASE PRESENTATION

- A 45 year old Caucasian male presented to the emergency department after ingesting highly toxic cardiac glycosides contained in oleander plant in the attempt of polypharmacy overdose.
- The patient became aware about the lethal effects of ingesting plants containing cardiac glycosides through helping his daughter identify poisonous plants as part of a school project.
- Recent divorce and financial struggles lead to the patient crushing and mixing half cup oleander plant with boiling water and then drinking it as tea.
- Eight hours post ingestion, bradycardia (40 beats/min) and hyperkalemia (5.6 mmol/L) developed, secondary to digitalis effects of oleander plant.

MANAGEMENT STRATEGIES AND OUTCOMES

- Key investigations in cardiac glycoside toxicity included ECG and monitoring of electrolytes, including potassium
- The patient was administered 10 vials DigiFab by slow IV infusion over 30 minutes
- Toxicology was contacted due to further bradycardia and worsening of mentation. They advised to repeat the dose and another 10 vials were given to the patient.
- In total, 20 vials of DigiFab were to be administered to the patient which significantly improved the bradycardia. A good overall clinical improvement was achieved within two hours of DigiFab administration.
- Actrapid IV 10 units stat was administered once the patient was transferred to the ward to treat hyperkalaemia
- Cardiac monitoring was regularly conducted for 48hours post ingestion, as well as potassium serum concentrations
- The management of the case resulted in patient regaining consciousness and became hemodynamically stable.



https://www.compoundchem.com/2016/06/21/foxgloves/ cited on 9/11/18

LITERATURE REVIEW

- According to Therapeutic Guidelines on Toxicology, Digoxin immune Fab administration is indicated if clinical features are suggestive of a potassium concentration above 5.0 mmol/L and decompensation from bradycardia.^{6,7}
- Studies have shown that DigiFab treatment has been associated with lowering of mortality and length of hospital stay.⁶
- Empiric dosing regimen for adult patients involves utilisation of 10-20 vials for acute poisoning.^{8,9}
- In acute overdose, activated charcoal can be administered to patients within 2 hours of the estimated time of ingestion, but it is unclear if it is effective in toxicity caused by plant cardiac glycosides.¹⁰

LIMITATIONS AND IMPLICATIONS

- DigiFab is specifically used in digoxin poisoning, however we can apply similar principles to oleander plant poisoning.
- In this particular case, vials had to be borrowed from another major hospital because the amount of stock needed for the patient was not adequate at the time of initial presentation.
- Considering the high cost of DigiFab and the cost limits in developing countries, which is where most poisonings take place,¹¹ research to develop less expensive antidotes is needed.
- Another minor limitation was not being able to measure digoxin serum levels. Serum digoxin levels do not reflect ingested amount of plant cardiac glycosides.



http://flipper.diff.org/apprules/items/items/7017 cited on 9/11/18

CONCLUSION

DigiFab is safe and indicated in all patients with life-threatening arrhythmias and an elevated cardiac glycoside concentration. The delayed onset of hyperkalaemia and cardiovascular toxicity can be lethal without the prompt initiation of digoxin antibodies in the emergency setting. In this case, the utilisation of DigiFab was a successful treatment in this intentional overdose of oleander plants containing toxic cardiac glycosides.

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