

# CASE REPORT

## Durian Induced Hyperkalaemia

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### SUMMARY

Hyperkalaemia is a life threatening acute medical emergency. Patients with end stage renal failure are more prone to get hyperkalaemia as potassium is normally excreted via the kidneys. Therefore, patients with end stage renal failure should avoid food with high potassium contents. Bananas are well known to have high potassium content. However, the 'king of fruits' the durian, has higher potassium content compared to bananas. We describe a case of life threatening hyperkalaemia in a lady with end stage renal failure who ate durians prior to her presentation.

### KEY WORDS:

Fruit, Durian, Hyperkalaemia, Sine wave

### CASE REPORT

A 48 year old lady presented to a district hospital's accident and emergency department on 14th August 2009 at 10pm with vomiting. She had underlying diabetes mellitus complicated by left below knee amputation and end stage renal failure on haemodialysis. Soon after presentation, she had cardiopulmonary arrest in the accident and emergency department and was revived after 10 minutes of cardiopulmonary resuscitation. Her last haemodialysis was on the 12th August 2009. She was supposed to have another dialysis on the 14th August but it was postponed to 15th August. Her blood investigations were as follows. Creatinine 825mmol/L, Urea 23.8mmol/L, Potassium 9.1mmol/L, Sodium 122mmol/L. Electrocardiogram(ECG) showed broad complex "sine wave" (Figure 1). She was treated with 2 courses of intravenous (IV) cocktail regime(IV Calcium gluconate 10ml, IV actrapid 10units, IV dextrose 50% 50ml.). She was then transferred to the Cardiac Coronary Care unit in Hospital Sultanah Aminah for monitoring and dialysis.

On arrival in CCU, her blood pressure was 128/70, Pulse rate 68, GCS full. Potassium was 9.6mmol/L. A haemodialysis was

planned using her arteriovenous fistula site but was complicated by poor outflow. A central venous catheter was inserted and haemodialysis performed via the central venous catheter.

She was given 4 hourly cocktail for hyperkalaemia (total of 6 cycles given), IV sodium bicarbonate and had 2 cycles of haemodialysis performed (on 15th and 16th August)

She was compliant to her dialysis sessions and was well prior to the admission. She was not on any potassium supplements, traditional medications, angiotensin converting enzyme inhibitors and angiotensin receptor blockers. She claimed to be compliant with her subcutaneous insulin injections. The only change in her diet was that she ate durians one day prior to her presentation. She claimed to have eaten a moderate amount.

### DISCUSSION

Durians are rich in potassium. 100g of durian flesh contain 436mg potassium<sup>1</sup>. Durians have higher potassium content compared to bananas. Bananas have 358mg potassium per 100g<sup>1</sup>. Consumption of fruits with high potassium in a

Table I: Potassium content per 100g of raw fruit (edible portion of fruit)<sup>1</sup>

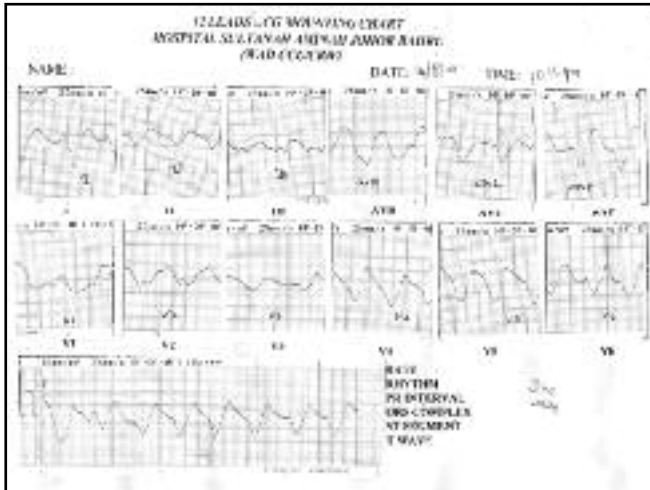
Durian	436
Banana	358
Jackfruit	303
Papaya	257
Honeydew	228
Grape	191
Oranges	180
Mango	156
Star fruit	133
Watermelon	112

Table II: Treatment of hyperkalaemia<sup>2</sup>

Therapy	Dose	Mechanism of action	Onset	Duration of action	Risks
Calcium gluconate	10mL of 10%	Stabilise myocardium	1 min	10-20 min	Vein irritation
Insulin and dextrose	50mL 50% + 6 unit insulin	Shifts K into cells	20-30 min	2 h	Hypoglycaemia
Sodium bicarbonate	500ml of 1.4%	Shifts K into cells	2-4 h	Up to 24 h	Volume overload
Salbutamol	20mg in 4 mL saline nebulised	Shifts K into cells	15-30 min	2 h	Tachycardia
Calcium resonium	15g tds with lactulose	Binds K in bowel	2-4 h	Removes K	Intestinal obstruction
Haemodialysis	-	Removes K	30 min	Removes K	

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**Fig. 1:** Broad complex "sine wave" with hyperkalaemia ( $K^+$  9.6mmol/L).

healthy individual usually does not pose any danger as potassium is excreted through the kidneys. However, those with renal failure need to avoid foods with high potassium content. (Table I) Patients are generally advised to moderate their intake of fruits to 2 servings per day. There is no specific advice to avoid durians given.

In this case, hyperkalaemia as the cause of her symptoms was picked up quickly and treatment instituted fast. Treatment of hyperkalaemia involves administration of intravenous medication to reduce and protect against the potentially

lethal effects of high potassium. Calcium Gluconate 10ml 10% and intravenous cocktail of IV actrapid 10 units and IV dextrose 50% 50 ml and IV sodium bicarbonate 100ml are given to drive the excess potassium into the cells. Urgent dialysis is needed to remove potassium from the body. (Table II).

The first change seen on the ECG in a patient with hyperkalaemia is a tall peaked and symmetrical T wave. Various conduction disturbances can then occur including right bundle branch block, left bundle branch block, bifascicular block, and advanced atrioventricular block. Ultimately the QRS widens further due to a severe conduction delay and may become "sine wave," resulting in ventricular standstill and a flat line on the ECG with complete absence of electrical activity. Figure 1. However, the progression and severity of ECG changes does not correlate well with the actual potassium level<sup>3</sup>.

This lady survived her ordeal and was discharged on the 17th August. Her last potassium result was 4.07mmol/L. Her ECG showed sinus rhythm. She was advised not to eat durians anymore.

#### REFERENCES

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