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## Exhaustion from prolonged gambling

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### ABSTRACT

Complaints of fatigue and physical exhaustion are frequently seen in the acute medical setting, especially amongst athletes, army recruits and persons involved in strenuous and exertional physical activities. Stress-induced exhaustion, on the other hand, is less often seen, but can present with very similar symptoms to physical exhaustion. Recently, three patients were seen at the Department of Emergency Medicine, presenting with exhaustion from prolonged involvement in gambling activities. The cases serve to highlight some of the physical consequences of prolonged gambling.

## 1. Introduction

When we hear the word “exhaustion”, it often conjures the image of a person or athlete, involved in strenuous activities, sports, or an army recruits. This represents physical exhaustion. Heat exhaustion may go hand in hand with physical exhaustion and can also happen to persons from the temperate climate acclimatizing to tropical weather. Stress or behavior-induced exhaustion on the other hand, is less often seen, but can present in a similar fashion. The ‘stress’ can be from various sources, with both physical and emotional consequences. Physical exhaustion is often created by choice when people choose to get involved in vigorous sports and exertional activities. The fatigue and symptoms that comes about will recover with rest, hydration, cooling, appropriate nutrition and relaxation. Stress-induced exhaustion may result from behavioural issues, habits and certain types of addiction or habits.

Recently, two integrated resorts (IR) opened in Singapore, each with its own 24 h casino. The following three cases serve to illustrate some of the effects of exhaustion from prolonged gambling on the body<sup>[1–2]</sup>.

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## 2. Case report

### 2.1. Case scenario 1

AK, a 50 year old Chinese lady, was brought in to the Emergency Department (ED) at 2 pm in the afternoon. The

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paramedics had picked her up from a local casino. The ambulance was called when she suddenly started acting in an 'unusual way' (incomprehensible words, inappropriate action and inability to recognize her friends)

On arrival, her vitals signs were: heart rate 92 per minute, blood pressure 102/66, temperature 37.6 degrees Celcius, oxygen saturation: 97% on room air and stat blood sugar was 4.1 mmol/L. She was not orientated to place, time and people.

Examination showed her to be dehydrated (dry tongue, lips, mucous membranes and reduction in skin turgor). Heart sounds were dual, lungs were clear and abdomen soft and not tender. There was no focal neurological deficit and her reflexes were all brisk.

History was obtained from a friend who came with her. She explained that the patient had been gambling in the casino since 10 am, the previous day (approx 28 h). She had not stopped for her regular meals but had taken some alcoholic drinks.

AK was started on a regime of saline infusion after her blood was drawn. 40 mL of Dextrose 50% was also given. Her Electrocardiogram showed sinus tachycardia with a rate of 100. Her sodium level was 128 mmol/L (normal: 135–145 mmol/L), whilst her urea (89 mmol/L) and creatinine (95  $\mu$ mol/L) levels were mildly increased (normal ranges: urea: 28–70 mmol/L; creatinine: 40–85  $\mu$ mol/L). Her CT scan of the brain was normal

She was continued on the hydration regime with gradual improvement, and return to her normal mental state within 10 h of observation and management. Her electrolytes and renal function were repeated and had returned to normal and she was subsequently discharged. As she is a foreigner visiting Singapore, a copy of her medical management was provided to her, for follow up with the doctor in her hometown. Appropriate advice was also given to her husband who accompanied her home as there will be a need for long term follow up and counseling.

### 2.2. Case scenario 2

TTL, a 52 year old Chinese gentleman was sent to the ED for acute confusion. His group of friends who were with him in the casino claimed he was not acting himself and could not recognize them. He had been gambling for the last 19 h. On arrival, he was calm with no respiratory distress or pain. His vitals signs were as follows: HR: 89 per minute, BP: 119/72, Oxygen saturation: 98% on room air. Blood sugar level: 4.0 mmol/L. Physical examination was normal but he was disorientated to time and person. His sodium level was 127 mmol/L, (normal: 135–145 mmol/L) chloride 92 mmol/L and urea 100 mmol/L (normal: 28–77 mmol/l). The rest of the blood tests were normal. The CT scan of the brain was normal as well. Following hydration and observation, he was back to his normal self within 12 h, with normalization of the electrolytes.

He was discharged with a copy of his medical records to be followed up with his physician in his native country.

### 2.3. Case scenario 3

PHH, a 60 year old Chinese man was sent to the ED for giddiness and syncope, associated with shortness of breath.

He was brought in from the casino, where he had been for the last 24 h. At presentation, he was slightly flushed and dehydrated. His temperature was 37.6 degrees Celcius, BP: 140/92 (supine) and 111/81 (standing), HR: 90 (supine) and 98 (standing), oxygen saturation: 98% on room air and blood sugar level: 7.9 mmol/L. He was orientated to time, place and person and his full blood count and electrolytes were normal. The urine for ketones test was positive. His electrocardiogram showed sinus tachycardia (rate 115), with no overt ST–T changes. Serial electrocardiograms and cardiac markers were all normal.

Following hydration and symptomatic management, his giddiness and postural hypotension resolved and he recovered well.

## 3. Discussion

All three patients had a common element of having spent prolonged hours in the casino. They had missed their regular meals, rest and may not have kept themselves well hydrated. Thus, the element of exhaustion with its related changes happened. This included dehydration, low blood sugar levels, electrolytes disturbances and sleep deprivation (all of which can explain the giddiness, postural drop in BP, confusion and 'unusual' behaviour). The CT scan done in the first two cases were normal and did not show any structural physical changes.

All three patients' condition was reversible with the appropriate treatment. The presentation of exhaustion and fatigue such as this is similar to that seen in athletes and persons involved in prolonged physical work or endurance sports. The effects seen in these 3 cases were related to prolonged involvement in gambling activities. In doing this, the regular bodily requirements and needs were neglected<sup>[2–3]</sup>. This can have adverse consequences as seen here. The patients continued with their gambling activities for prolonged periods. The environment in the casinos are also rather conducive for this to happen, *e.g.* cool temperature with air-conditioning, no exposure to sunlight and thus a loss of day-night orientation, soft background music or noise. People may tend to lose track of time and forget their regular needs such as meals. The regular beverages served in these places are also usually alcohol containing, carbonated or caffeinated drinks. Other risks associated with prolonged activities in the casinos include the risk of deep vein thrombosis, acute coronary syndrome and even seizures in predisposed patients

Prolonged engagement in certain activities, which can be addictive, may risk these persons experiencing exhaustion, as seen in our 3 cases here. Other problems too can arise with specific behaviour. Screen addicts, for example, may have visual problems from the long hours spent in front of screens and monitors, can develop joint symptoms, arthritis or 'overuse syndromes' from repetitive, prolonged use of keyboards and controllers. Screen addicts who spend many hours in front of TV screens and monitors can also develop obesity, poor lifestyle and diet, as well as neglected hygiene. Dehydration, exhaustion and malnutrition can also occur<sup>[3–4]</sup>.

The 3 cases discussed represented patients who presented for the first time to the ED in Singapore with the effects

of prolonged gambling. As they were tourists, it was not possible to have old records of attendance to healthcare institutions locally. If one suspects the behavior is habitual or an addiction, the appropriate referral would have to be made for follow up and behavioural counseling. Whilst pathological gambling is considered a form of addiction by some, others have argued that it is a form of obsessive-compulsive disorder<sup>[3–8]</sup>. The debate continues, but what is crucial is that we have management strategies and protocols to handle these problems related to gambling<sup>[3–5,7]</sup>.

It is also interesting to note that, anecdotally, all 3 cases represented ethnic Chinese patients. In a paper by Loo JMY *et al*, the authors noted that social gambling is widespread among Chinese communities, as it was the preferred form of entertainment<sup>[6,9]</sup>. The authors also stated that the theories, assessment and intervention methods developed in the west should be modified and tailored for Asian and Chinese patients, especially when cultural differences do exist in the patterns of gambling and concept of addiction<sup>[6,9]</sup>.

More men than women are thought to have the pathological gambling habit, but recently women seem to be developing this at a higher rate. There are also observations made that the disorder tend to get worse at a faster rate in women<sup>[3,7,9–11]</sup>. Another form of gambling is binge gambling, which is a subtype of compulsive gambling. This happens during discrete periods of time, with breaks in between.

Fatigue may result in difficulty in initiating or sustaining voluntary activities on a person's part. It is multifactorial in causation but when it comes to mental fatigue, the pathophysiology is still unclear and work in progress<sup>[8,13]</sup>. In a paper by Mizuno K *et al*, prolonged cognitive load (which can include gambling in our example) is associated with sympathetic hyperactivity and a reduction in parasympathetic activity<sup>[12]</sup>. Fatigue degrades human performance and unlike alcohol or the use of drugs, fatigue is more difficult to prove as the cause of accidents or lack luster performance<sup>[12–15]</sup>. The other contributing factors in this case may be the lack of meals and ingestion of alcohol and sugar rich fluids, sleep disturbance and deprivation as well as the phenomenon of jet-lag, as the 3 cases illustrated were all tourist.

Now that Singapore has two IRs, each with its own in-house casinos, there may be an increase in issues related to gambling. The accessibility and availability of gambling outlets is an important factor in the number of people impacted by gambling and its related activities. Thus, awareness and vigilance of related issues is important. There must be appropriate management protocols, interventions, follow-ups and counseling. In fact, Singapore had set up a National Council on Problem Gambling (NCPM) and the Ministry of Health started a Community Addictions Management Programme (CAMP), where cases seen can be self referred or sent in by family members and related institutions. The programme serves to provide comprehensive addiction treatment and emphasizes on training, prevention and also public education.

Stress-induced and physical-induced exhaustion can present with similar symptoms. Healthcare workers in the acute setting should be vigilant of this and be able to differentiate the two groups based on good detailed history taking. The management of both is similar but the former may require counseling, behavioural therapy and

appropriate handling of underlying behavioural issues. Exhaustion from prolonged gambling can be categorized under the group of stress or behavior induced exhaustion.

### Conflict of interest

The authors declare they have no conflict of interests.

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