

# RESEARCH FOR CLINICIANS DAY 04/11/2021 - SOME LIKE IT HOT, BUT NOT EVERYONE

## CASE REPORT

A 25 YEAR OLD MALE WAS BROUGHT TO THE EMERGENCY DEPARTMENT (ED) AFTER A TRANSIENT LOSS OF CONSCIOUSNESS (TLOC) TOWARDS THE END OF A CHARITY 10KM RUN, WHILE STILL RUNNING. THE PATIENT HAD PERSISTENT ALTERED MENTAL STATUS AFTER RECOVERING CONSCIOUSNESS.

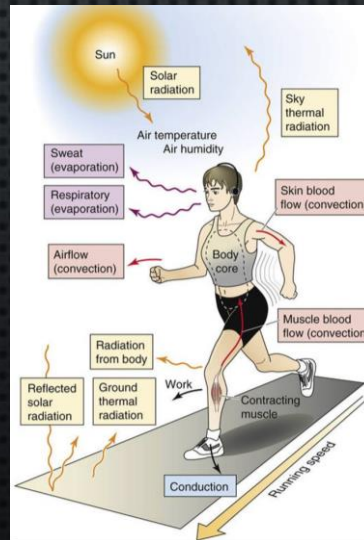


THE PATIENT HAD PRONOUNCED TACHYPNOEA (WITH NORMAL PERIPHERAL OXYGEN SATURATIONS), TACHYCARDIA AND HYPERTENSION. THE PERIPHERAL TEMPERATURE WAS 39.9 DEGREES CELSIUS AND THE PATIENT WAS ENCEPHALOPATHIC. THERE WAS A TRANSIENT IMPROVEMENT IN COGNITION AFTER BENZODIAZEPINE ADMINISTRATION, BUT THE PATIENT PROCEEDED TO RAPID SEQUENCE INDUCTION OF ANAESTHESIA BECAUSE OF A SEIZURE IN THE DEPARTMENT.

THE DIAGNOSIS WAS EXERTIONAL HEAT STROKE. THE PATIENT MADE A FULL RECOVERY.

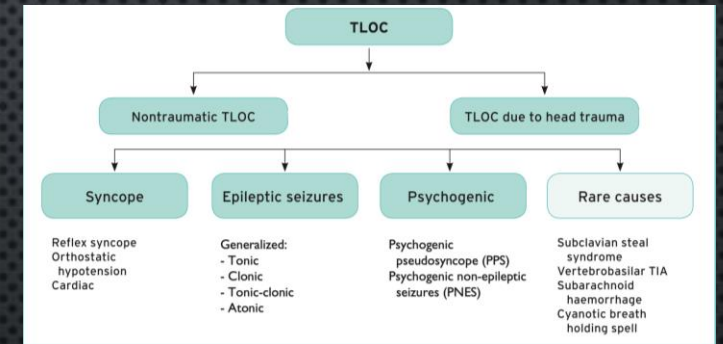
## HEAT ILLNESS

CLASSIC HEAT INJURY IS THE RESULT OF HIGH ENVIRONMENTAL HEAT STRESS BUT EXERTIONAL HEAT ILLNESS INVOLVES IMPAIRED THERMOREGULATION DUE TO OVERWHELMING HEAT PRODUCTION. THE 4 MECHANISMS OF HEAT LOSS FROM THE BODY (CONDUCTION, CONVECTION, RADIATION AND EVAPORATION) FAIL TO ADEQUATELY LOWER CORE BODY TEMPERATURE AND THE SUBSEQUENT DIRECT CELLULAR INJURY LEADS TO INTERRUPTION OF CELLULAR PROCESSES AND CELL DEATH. THE CENTRAL NERVOUS SYSTEM (CNS) IS PARTICULARLY VULNERABLE TO HEAT STROKE AND A CARDINAL FEATURE IS ALTERED MENTAL STATUS. HEAT ILLNESS IS TREATED BY RAPID COOLING.



THE CAUSE OF TLOC AND SEIZURE IN THIS CASE WAS AN UNCOMMON ONE AND SO SHOWN BELOW IS THE EUROPEAN SOCIETY OF CARDIOLOGY UMBRELLA CLASSIFICATION OF TLOC AND BELOW THIS A MNEMONIC FOR THE COMMON CAUSES OF SEIZURES

## TRANSIENT LOSS OF CONSCIOUSNESS



## SEIZURES (EPILEPSIES)

- EPILEPSY (AND POOR ANTI-EPILEPTIC DRUG ADHERENCE)
- PREGNANCY (ECLAMPSIA)
- INFECTION (CNS INFECTION)
- LOW BLOOD SUGAR (HYPOGLYCAEMIA)
- ELECTROLYTE DISTURBANCES (PARTICULARLY HYONATRAEMIA)
- POISONING
- STROKE (PARTICULARLY CEREBRAL VENOUS/SINUS THROMBOSIS)
- INJURY (HEAD TRAUMA)
- ETHANOL WITHDRAWAL
- SPACE OCCUPYING LESION (PARTICULARLY BRAIN TUMOUR)