Clinical Significance Hyperthermic syndromes caused by medications include serotonin syndrome, neuroleptic malignant syndrome, anticholinergic toxidrome, and malignant hyperthermia.Excess T4 and T3 lead to an increased basal metabolic rate, thus increasing the body temperature, ATP turnover, and oxygen consumption.Clinical Significance Hyperthermic syndromes caused by medications include serotonin syndrome, neuroleptic malignant syndrome, anticholinergic toxidrome, and malignant hyperthermia.Excess T4 and T3 lead to an increased basal metabolic rate, thus increasing the body temperature, ATP turnover, and oxygen consumption.Malignant Hyperthermia (MH) occurs due to a genetic alteration of ryanodine receptor 1 (RYR1) in the muscle cells, leading to skeletal muscle hypermetabolism upon exposure to depolarizing muscle relaxants (succinylcholine), halogenated anesthetics (halothane, isoflurane, desflurane, enflurane, ether, or sevoflurane), or, rarely, excessive heat or vigorous exercise.Malignant Hyperthermia (MH) occurs due to a genetic alteration of ryanodine receptor 1 (RYR1) in the muscle cells, leading to skeletal muscle hypermetabolism upon exposure to depolarizing muscle relaxants (succinylcholine), halogenated anesthetics (halothane, isoflurane, desflurane, enflurane, ether, or sevoflurane), or, rarely, excessive heat or vigorous exercise.Anticholinergic toxidrome is caused by ingesting medications with anticholinergic properties, including antihistamines, antidepressants, Parkinson drugs, mydriatics, antispasmodics, and antipsychotics.Anticholinergic toxidrome is caused by ingesting medications with anticholinergic properties, including antihistamines, antidepressants, Parkinson drugs, mydriatics, antispasmodics, and antipsychotics.Neuroleptic Malignant Syndrome (NMS) develops from using neuroleptics (dopamine antagonists), with signs and symptoms typically occurring within the first few weeks of treatment.Physical exam findings include hyperthermia, flushing, anhidrosis, dry mucous membranes, mydriasis, urinary retention, and altered mental status.In MH, once a cell depolarizes, the defective RYR1 becomes hyperactivated, causing excessive calcium release, inappropriate muscle contraction, and increased metabolic rate, all leading to excessive heat production.Neuroleptic Malignant Syndrome (NMS) develops from using neuroleptics (dopamine antagonists), with signs and symptoms typically occurring within the first few weeks of treatment.Physical exam findings include hyperthermia, flushing, anhidrosis, dry mucous membranes, mydriasis, urinary retention, and altered mental status.In MH, once a cell depolarizes, the defective RYR1 becomes hyperactivated, causing excessive calcium release, inappropriate muscle contraction, and increased metabolic rate, all leading to excessive heat production.Treatment includes stopping the offending drug, cooling methods, and administering cyproheptadine, a 5HT-2 receptor antagonist.Treatment includes stopping the offending drug, cooling methods, and administering cyproheptadine, a 5HT-2 receptor antagonist.Carbonic anhydrase inhibitors, such as acetazolamide and topiramate, can cause transient hypohidrosis and lead to heat intolerance, especially in children.An overactive thyroid gland releases excess T4 and T3, hormones that affect the .basal metabolic rate of cells