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Decerebrate posture is caused by damage to the cerebral cortex but the clinical manifestations depend on the site of the lesion. Causes of decerebrate postures include seizures, tumors, vascular lesions, and trauma. Spontaneous nystagmus or eye deviation is also seen in decerebrate postures. This type of posturing usually indicates that there has been severe damage to the brain.Decerebrate posture is a rare type of posture seen in people who have injuries to their brainstem and is a rare medical condition, in which the upper extremities are held outstretched and internally rotated. In this position, the arms are pronated with the forearms held vertically, the toes being pointed downward, and the head and neck being arched backward. The legs are also extended and pronated.The patient is rigid, with the teeth clenched. This kind of posturing seen mostly in severe midbrain lesions.Decerebrate posture can occur on one side or both sides, or in just the arms or limbs. It is also seen with another type of abnormal posture called decorticate posture . A person who have decorticate posture on one side of the body while at the opposite side decerebrate posture in few severe cases.Opisthotonos may occur in severe cases of decerebrate posture where a severe muscle spasm of the neck and back are seen. The Nobel Laurette Charles Sherrington first time described decerebrate posturing in 1898 after transecting the brainstems of live monkeys and cats.Decerebrate posturing are considered pathological posturing responses to usually unpleasant stimuli from an external or internal, in which stereotypical body movements of the trunk and limb are seen.Following are the most common Causes areHaemorrhage in the brain from any causeBrain tumourBrain AbscessHemorrhagic StrokeBrain affected mainly due to side effect of drugs, poisoning or fungal , Bacterial infectionHead- brain injuryBrain injury due to liver failureIncreased pressure in the brain from any cause such as HydrocephalusLow blood sugar (hypoglycaemia)Brain tumourInfections, such as meningitisIntracerebral hemorrhage.Reye syndrome (liver function and brain damage related problems that mostly affects children)Brain injury from lack of oxygenCerebral malariaLead poisoningIn patients with all-ready have Brain-damage, episodes of decerebrate posturing can occur in response to numerous unpleasant external or internal stimuli such as fever, hypoxia; metabolic disturbance; sensory irritation; hypoglycemia; and meningeal irritation.Following are the most common symptoms of decerebrate posturing however it may vary depends upon lesion and type of Injury :A severe muscle spasm of the neck and back may occur in severe cases of decerebrate posture(Opisthotonos posture).In Decerebrate posturing movement pattern are adduction and internal rotation of the shoulder, extension at the elbows with pronation of the forearm, and flexion of the fingers and the lower limbs movement pattern are Hip extended and internally rotated with the knee also extended and Ankle are plantar flexed while Toes are typically abducted and hyperextended.The patient is in rigid state with the teeth clenched.The decerebrate posture can be seen on just one side of the body or on both sides, and it may be only in the arms and may be both arms and legs in severe trauma.In severe Trauma A person can also have decerebrate posture on one side of the body while at the opposite side decorticate posture can be seen.Glasgow Coma Scale (for adults) is nearly about 2 score a patient displaying decerebrate posturing in response to pain (Motor section) and Pediatric Glasgow Coma Scale(for infants), due to his or her muscles extending because of the neuro-muscular response to the stimuli (external or internal).A person with decorticate posturing may gradually start to show decerebrate posturing, or may go from one form of posturing to the another.Progression from decorticate posturing to decerebrate posturing is mostly indicats that transtentorial or tonsilar brain herniation.Decerebrate posturing responses to usually unpleasant stimuli from an external or internal where exetends arms and leg movements of the trunk and extremities are typically indicative of significant brain or spinal injury.Following are the method are most commonly used to Diagnosis of Decerebrate posture.A computerized tomography scan (CT Scan)Magnetic Resonance Imaging- of Head (MRI)Blood and urine tests to examine blood counts, screen for drugs and toxic substances, and measure body chemicals and mineralsCerebral angiography (dye and x-ray study of blood vessels in the brain)EEG (brain wave testing)Intracranial pressure (ICP) monitoringStudy shows that Patients have head injury with decerebrate posture have surviving ration nearly about 10%.Children with head injury with decerebrate posturing are admitted to Hospital in ICU have have a mortality of 10% to 13%; however, in severe cases the mortality ratio is nearly 71%.Different scientific studies have also shown similar mortality rates of 68% to 83% in TBI with decerebrate posturing.Normally people showing decerebrate or decorticate posturing are in a coma and have poor prognoses, with risks for cardiac arrhythmia or arrest and respiratory failure.Factors that involved positively in survival in TBI with decerebrate posturing are younger patient age, admission within as early as possible hours of injury, and extradural hematoma. Negative factors are mostly acute subdural hematoma and older age.Emergency ICU Treatment (Mostly Neauro. NICU).Emergency Craniotomy for evacuation of extra-axial hematoma can improve survival.Remove the cause (Treatment depends upon Diagnosis and symptomatic) eg. correcting if possible metabolic derangements or / and treating infections.Symptomatic supportive treatment are started.Physiotherapy treatment and exercises are used to treat and improve the symptoms of decerebrate posture. The most common treatment for decerebrate posture is postural rehabilitation, which uses exercises and physiotherapy treatments to improve the muscles that support the spine and to improve the posture of the spine.Postural exercises are used to improve the posture of the spine and to strengthen the muscles that help support the spine. Decerebrate posture is often treated with a series of exercises that are designed to improve the posture of the spine, strengthen the muscles that support the spine, and stretch the muscles that are tight due to the position of the head and shoulders.Following are the most commonly follow treatment are used , However it vary depends upon symptoms, causes and Diagnosis of the condition.Relax Passive MovementChest PhysiotherapyReduce rigidity / spasticityRegular Stretching exerciseRehabilitation ProgramPostural correctionRegular Ankle MovementStretching exerciseRegular change the position if patient is in coma stage (Mostly supine to side lying position to avoid Bed sore)Range of Motion exercise :Passive relax passive range of motion (ROM) exercise helps to avoid joint stiffness and deformities. One a daily passive movement of all four limb and trunk are required.To reduce spasticity / rigidity regular Stretching exercise are the best treatment option.Stretching exercise of tight muscles mainly Hamstring, calf and adductors muscles stretching exercise are important in lower limb and relax passive movement to maintain range of motion are also equally important.In Upper limb according to assessment of spasticity/rigidity stretching exercise are started. Maintain Range of Motion with the help of relaxed passive movement of all joint is beneficial.To improve Balance of Sitting Balance and standing Balance, according to assessment Balance exercise are started for overall rehabilitation to improve condition.Strengthening exercise in Decerebraate Posture :Strengthening exercise of weak muscles according MMT (Manual muscle testing) are started , that will help overall posture correction and Rehabilitation. All four limb and trunk muscle strengthening exercise are also depends upon assessment.Posture correction :Orthosis / Splint are also use to correct deformities and posture.Following Brain area are damaged in the Decerebrate posture :large bilateral forebrain lesions with progression caudally into the diencephalon and midbrain.posterior fossa lesion compressing the midbrain or rostral pons.the level between the superior and inferior colliculi within the midbrain (being at or below the level of the red nucleus)Latest studies shown that the vestibulospinal tract plays a major role in decerebrate posturing. The vestibulospinal pathways have an excitatory effect on extensor motor neurons in the spine, while inhibition of flexor motor neurons. Decorticate and decerebrate posturing are abnormal posturing responses typically to noxious stimuli. They involve stereotypical movements of the trunk and extremities. To avoid the high morbidity and mortality associated with these conditions, it must be promptly diagnosed and treated. This activity reviews the assessment and management of decorticate and decerebrate posturing and highlights the role of the interprofessional team in evaluating and treating patients with this condition. Objectives: Identify the physical exam findings associated with decorticate and decerebrate posturing.Describe the pathophysiology of decorticate and decerebrate posturing.Outline the prognosis of patients with decorticate and decerebrate posturing.Review the etiology of decorticate and decerebrate posturing. Access free multiple choice questions on this topic. Decorticate and decerebrate posturing are both considered pathological posturing responses to usually noxious stimuli from an external or internal source. Both involve stereotypical movements of the trunk and extremities and are typically indicative of significant brain or spinal injury.[1] The Nobel Laurette Charles Sherrington first described decerebrate posturing in 1898 after transecting the brainstems of live monkeys and cats.[2]Synonymous terms for decorticate posturing include abnormal flexion, decorticate rigidity, flexor posturing, or decorticate response. Synonymous terms for decerebrate posturing include abnormal extension, decerebrate rigidity, extensor posturing, or decerebrate response.[2]There is a criticism within the literature of the use of the terms decorticate and decerebrate posturing in clinical contexts due to their association with discrete anatomical locations that, in reality, may not be so prescriptive. Brain lesions of several anatomical regions may cause both postures, though they do usually involve some degree of brainstem injury.[1] It is, however, accepted that decorticate typically requires an injury more rostral than decerebrate posturing. In most literature, this level is considered the red nucleus at the intercollicular level of the midbrain.[2][3]There are numerous causes of abnormal posturing including supratentorial and infratentorial lesions, alongside more diffuse pathologies such as metabolic and infective causes:[4][1] Supratentorial Lesions AbscessExtra-axial hematoma: subdural and extraduralHydrocephalusIntracerebral hemorrhageRaised intracranial pressureTraumatic brain injury including diffuse axonal injuryTumor Infratentorial LesionAbscessHydrocephalusInfarct: brainstem or bilateral diencephalicIntracerebral hemorrhage: cerebellar or brainstemTraumatic brain injury including diffuse axonal injuryTumor Diffuse and Metabolic Electrolyte abnormalities: hyponatremia, hypomagnesemia, hypocalcemiaEncephalitisHepatic encephalopathyHypoxic brain injuryHypoglycemiaLead poisoningMeningitisReye syndromeIn patients with preexisting structural lesions of the central nervous system, episodes of decerebrate posturing can occur in response to numerous physiological factors including, but not exclusive to, fever, hypoxia; metabolic disturbance; sensory irritation; hypoglycemia; and meningeal irritation.[6]Data on the incidence of abnormal posturing is not published. However, the incidence of pathologies that commonly cause decorticate and decerebrate posturing is available. The commonest cause of decorticate and decerebrate posturing is traumatic brain injury (TBI).[4] A 2019 systematic review estimates there to be 69 million TBI worldwide each year, with 7.95% being classed as severe. Severe TBI is defined as patients with a GCS of 8 or less.[7]Typically, the anatomical divide associated with decorticate and decerebrate posturing is the intercollicular line at the level of the red nucleus. However, this concept has been criticized as lesions in the supratentorial region can also cause both decorticate and decerebrate posturing, though the brainstem is typically involved.[1]Both posturing types are stereotypical; however, they can be present in varying degrees and even asymmetrically with decorticate on one side and decerebrate contralaterally. An inconsistent presentation of a given posture tends to suggest a lesser degree of injury.[1] Decerebrate Posturing Decerebrate posturing has been demonstrated in monkeys with a transecting lesion at the level between the superior and inferior colliculi within the midbrain. This is also described as being at or below the level of the red nucleus. Sherrington performed live animal studies where anesthetized monkeys had their cerebral cortex removed from the intercollicular level upwards. The animals continued to breathe independently and developed stereotypical extension rigidity of the extremities. [2] A study with intercollicular transection showed that extensor posturing only occurred in the context of either noxious stimuli, passive hyperextension of the head, or metabolic disturbance such as hypoxia.[6]Decerebrate posturing can be seen in patients with large bilateral forebrain lesions with progression caudally into the diencephalon and midbrain. It can also be caused by a posterior fossa lesion compressing the midbrain or rostral pons. Though decerebrate posturing implies a destructive structural lesion, it can also be caused by reversible metabolic disturbances such as hypoglycemia and hepatic encephalopathy.[1]Through animal models and human studies, it has been shown that the vestibulospinal tract plays a major role in decerebrate posturing. The vestibulospinal pathways have an excitatory effect on extensor motor neurons in the spine, while inhibition of flexor motor neurons. The vestibular nuclei receive input from the vestibular apparatus and spinal somatosensory pathways while receiving modulatory signals from the cerebral cortex and the fastigial nucleus of the cerebellum. In isolation, the vestibular nucleus, via the vestibulospinal tract, causes activation of extensor motor neurons in the spinal cord and inhibition of flexor motor neurons. However, under normal physiology, the higher brain centers of the cortex and cerebellum inhibit the vestibular nuclei, thus preventing this reflex. Decerebrate posturing results from a disconnection between the modulatory higher centers and the vestibular nuclei, resulting in unsuppressed extensor posturing. [8] Decorticate Posturing The mechanism for decorticate posturing is not as well studied as that of decerebrate. Phylogenetically, the region of the red nucleus within the midbrain plays a significant part in locomotion. In primates, the rubrospinal tract influences primitive grasp reflexes, particularly in infants and is, incidentally, responsible for crawling.[9] The rubrospinal tract carries signals from the red nucleus to the spinal motor neurons. Primates are reliant on fine motor skills, and therefore the motor cortex via the corticospinal tracts is more prominent in movement than phylogenetically lower regions. Extensive lesions involving the forebrain, diencephalon, or rostral midbrain are known to cause decorticate posturing. This includes the motor cortex, premotor cortex, corona radiata, internal capsule, and thalamus.[3][1] In primates, the rubrospinal tract descends as far as the thoracic spine, it, therefore, has effects on the upper limbs but not lower. The red nucleus, via the rubrospinal tract, causes a flexion, grasping type reflex of the upper limbs. The higher brain centers, such as the cerebral cortex, inhibit this reflex during normal physiology. With a lesion of the corticospinal tract, the red nucleus is disinhibited, and the flexion reflex of the upper limbs is unimpeded. The vestibulospinal tracts, as discussed above, are also left disinhibited, and extension of the lower limbs occurs. This flexion of the upper limbs and extension of lower limbs is decorticate posturing. [3]The red nucleus is anatomically at the intercollicular level, and thus lesions above the red nucleus tend to cause decortication and lesions below, decerebration.[3][8] As compression advances from the regions of the forebrain and diencephalon to the brainstem, abnormal posturing can progress from decorticate to decerebrate.[1]Teasdale et al., in their original paper on the Glasgow coma scale, suggested that distinguishing between normal and abnormal flexion requires an experienced observer, and thus, simply defining the response as either flexion or extension may be sufficient in the early stages following brain insult.[10] Decorticate Posturing Decorticate posturing is described as abnormal flexion of the arms with the extension of the legs. Specifically, it involves slow flexion of the elbow, wrist, and fingers with adduction and internal rotation at the shoulder. The lower limbs show extension and internal rotation at the hip, with the extension of the knee and plantar flexion of the feet. Toes are typically abducted and hyperextended.[1] Decerebrate Posturing Decerebrate posturing is described as adduction and internal rotation of the shoulder, extension at the elbows with pronation of the forearm, and flexion of the fingers. As with decorticate posturing, the lower limbs show extension and internal rotation at the hip, with the extension of the knee and plantar flexion of the feet. Toes are typically abducted and hyperextended.[1] Teasdale and Jennett advocated not using the term 'decerebrate' in the assessment of coma due to its association with a specific physioanatomical correlation, but to rather use the term 'extension.'[10] Stages of Brain Herniation In central herniation, the neurological status of a patient can be seen to progress through a series of stages. Starting with the diencephalic stage, phases proceed through: obeying commands, bilateral Babinski reflexes, paratonia, grasp reflex, decortication. Later as the midbrain and upper pons are involved, the patient becomes decerebrated. As the lower pons and upper medulla are involved, the patient becomes flaccid.[1]Decorticate and decerebrate posturing are clinical diagnoses and should be considered a pathological sign of a neurological injury rather than a diagnosis unto themselves. Due to the variety of etiologies that can cause these findings, numerous investigations may be appropriate. As discussed above, compressive lesions may benefit from surgical intervention, best done in a timely manner; therefore, early intracranial imaging such as CT or MRI is warranted.[11] Other causes, such as infection and metabolic disturbance, can be investigated with laboratory tests, including serum and CSF sampling.[4][1][5]Treatment is directed at the underlying cause, for instance, correcting, where possible, metabolic derangements, and treating infections.[5] In TBI, evacuation of extra-axial hematoma can improve survival.[11][12] Some pathologies may not be reversible, such as hypoxic brain injury, and thus supportive approaches are taken.[13]Normal flexion, also known as withdrawal to pain, can appear similar to decorticate posturing. However, normal flexion is a rapid and variable movement compared with the slow and stereotypical movements of abnormal flexion. In normal flexion, the shoulder abducts away from the body, the wrist is either neutral or extended, and importantly, there is no extension in the lower limbs. In abnormal flexion, the shoulder adducts, and internal rotates, the wrist flexes with forearm pronation. A key feature is the extension of the lower limbs.[1][14]Spinal reflexes may still be present following brain death. One study found motor spinal responses present in 22% of patients with confirmed brain death. These can be mistaken for abnormal posturing movements such as decerebration.[15]Opisthotonus is extra-pyramidal abnormal posturing seen in cerebral palsy, tetanus, drowning victims, TBI, and poisoning. It is abnormal posturing with a dramatically arched back and neck.[16] Paratonia, or gegenhalten, can also look like abnormal posturing and is typically caused by encephalopathy or neurodegenerative conditions.[1]Lastly, patients with corticospinal tract injuries, such as ischaemic strokes, hemorrhages, or tumors, can develop spasticity. Usually in the upper limb flexor muscles dominate and extensor in the lower limb, similar to decorticate posturing. The most striking difference between spasticity and abnormal posturing is the preservation of consciousness in spastic patients.[8]Abnormal posturing is an ominous sign, with only 37% of decorticate patients surviving following head injury and only 10% in decerebrate.[1][14] Overall, children requiring admission to hospital due to head injury have a mortality of 10% to 13%; however, in severe cases with decerebrate posturing, the mortality is 71%.[17] Other studies have shown similar mortality rates of 68% to 83% in TBI with decerebrate posturing.[11][18][12] Factors that favored survival in TBI with decerebrate posturing included younger patient age, admission within 6 hours of injury, and extradural hematoma. Poorer outcomes were found in acute subdural hematoma and older age.[11]Outcomes in patients with abnormal posturing following hypoxic brain injury were reviewed in 210 patients. Abnormal posturing, or GCS motor score of less than 4, after 1-day post-insult, suggested virtually no chance of regaining independence.[13] Patients with gunshot wounds to the head who demonstrated either decorticate or decerebrate posturing had a close to zero chance of a meaningful recovery.[19] The Hunt and Hess subarachnoid hemorrhage severity grading scale includes decerebrate posturing in grades 4 and 5. They quoted 42% and 77% mortality, respectively.[20]As discussed under prognosis, complications include death and poor functional neurological outcome. In the immediate period, patients with coma can also have problems maintaining their airway and controlling their cardiorespiratory system.[21][22]Given the most common cause of abnormal posturing is TBI, public health measures to reduce traumatic events such as road traffic collisions and workplace accidents are important.[7]Decorticate and decerebrate posturing are medical emergencies. Early diagnosis and intervention may improve survival and functional outcome.[11] Herniation syndromes, raised intracranial pressure (ICP), intracranial hemorrhage, TBI, and penetrating trauma may warrant emergent neurosurgical involvement.[1][19] Infective and metabolic causes require supportive therapies and the involvement of medical, neurological, or infectious disease specialists.[5] Patients with abnormal posturing likely require aggressive goal-directed therapies, and thus an intensive care environment may be appropriate.[22] Alongside this, medical therapies to reduce acutely raised intracranial pressure such as mannitol and hypertonic saline have level III evidence.[23] Level II evidence has shown hyperventilation may benefit raised ICP, though only as a temporizing measure and not prophylactically.[24] That said, given the often poor outcome in patients with abnormal posturing, particularly decerebration, aggressive treatment may be ethically questionable, and a case by case assessment is required.[1][14]Review QuestionsDecorticate Posturing Contributed by Katherine Humphreys Decerebrate Posturing Illustration by K Humphreys 1.Plum F, Posner JB. 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[PubMed: 10937894] Disclosure: James Knight declares no relevant financial relationships with ineligible companies. Disclosure: Lawrence Decker declares no relevant financial relationships with ineligible companies. Decerebrate posture is an abnormal body posture that involves the arms and legs being held straight out, the toes being pointed downward, and the head and neck being arched backward. The muscles are tightened and held rigidly. This type of posturing usually means there has been severe damage to the brain.Decerebrate posturing is also called a decerebrate response, decerebrate rigidity, or extensor posturing. It describes the involuntary extension of the upper extremities in response to external stimuli. In decerebrate posturing, the head is arched back, the arms are extended by the sides, and the legs are extended.Decerebrate PostureA hallmark of decerebrate posturing is extended elbows. The arms and legs are extended and rotated internally. The patient is rigid, with the teeth clenched.The signs can be on just one side of the body or on both sides, and it may be just in the arms and may be intermittent.A person displaying decerebrate posturing in response to pain gets a score of two in the motor section of the Glasgow Coma Scale (for adults) and the Pediatric Glasgow Coma Scale (for infants), due to his or her muscles extending because of the neuro-muscular response to the trauma.Decerebrate posturing indicates brain stem damage, specifically damage below the level of the red nucleus (e.g. mid-collicular lesion). It is exhibited by people with lesions or compression in the midbrain and lesions in the cerebellum. Decerebrate posturing is commonly seen in pontine strokes. A patient with decorticate posturing may begin to show decerebrate posturing or may go from one form of posturing to the other. Progression from decorticate posturing to decerebrate posturing is often indicative of uncal (transtentorial) or tonsilar brain herniation. Activation of gamma motor neurons is thought to be important in decerebrate rigidity due to studies in animals showing that dorsal root transection eliminates decerebrate rigidity symptoms. Transaction releases the centres below the site from higher inhibitory controls.DecerebrationIn competitive contact sports, posturing (typically of the forearms) can occur with an impact to the head and is termed the fencing response. In this case, the temporary posturing display indicates transient disruption of brain neurochemicals, which wanes within seconds.Following are the most common causes are:Haemorrhage in the brain from any causeBrain tumourHemorrhagic StrokeBrain problems due to side effects of drugs, poisoning, or fungal, Bacterial infectionHead-brain injuryBrain injury due to liver failureIncreased pressure in the brain from any causeBrain tumourInfections, such as meningitisReye syndrome (brain damage and liver function problems that affect children)Brain injury from lack of oxygenDecerebrate PosturingThe following method is used to Diagnosis of Decerebrate posture.CT Scan or Magnetic Resonance Imaging- of Head (MRI)Blood and urine tests to check blood counts, screen for drugs and toxic substances, and measure body chemicals and mineralsCerebral angiography (dye and x-ray study of blood vessels in the brain)EEG (brain wave testing)Intracranial pressure (ICP) monitoringNormally people displaying decerebrate or decorticate posturing are in a coma and have poor prognoses, with risks for cardiac arrhythmia or arrest and respiratory failure.Physiotherapy treatment :Remove the causeRemove rigidity and Remove spasticityPostural correctionPhysiotherapy treatment of Decerebrate posture is according to the assessment of Posture, Diagnosis of the related condition, and symptomatic treatment.The goal of Physiotherapy Treatment :Regain movement controlReduce Rigidity/spasticityMaintain Body PostureRelax Body PostureImprove Sitting and standing Balance.To reduce spasticity and rigidity :To reduce spasticity and rigidity Stretching exercise are the best treatment option. Stretching exercises of tight muscles mainly Hamstring stretching exercise, Adductor stretching exercise, and calf muscle stretching exercise are important in the lower limb, and relaxing passive movement to maintain body posture is also equally beneficial.In the Upper limb according to the assessment of spasticity stretching exercises are required. Maintaining a Range of Motion and relaxed passive movement of all joints is required.To improve Balance of Sitting Balance and standing Balance, according to the assessment Balance exercise are helpful in improving condition.Upper limb stretchLower limb stretching ExerciseLower limb strengthening exerciseUpper limb strengthening The main difference between the two postures is whether or not the arms are bent at the elbow. A person whose elbows bend and fold their arms up toward their chest exhibits decorticate posture. A person whose limbs all stretch away from their head exhibits a decerebrate posture.The most prevalent causes of decerebrate posture are head traumas, including concussions and severe brain injuries. Use safety equipment such as helmets and seat belts to protect your brain from harm.Damage to deeper brain areas, such as the midbrain, pons, and diencephalon, causes decerebrate posturing.In order for a person to be declared brain dead, all of the following tests must reveal a lack of brain function: There should be no spontaneous movement or movement in reaction to unpleasant stimuli (spinal reflex movement is permitted). Seizures, decerebrate or decorticate posture, or dyskinetic movements are not permitted.While decorticate posturing is still an indication of significant brain injury, decerebrate posturing generally indicates more extensive damage at the rubrospinal tract, and therefore the red nucleus is also implicated, suggesting a lesion deeper in the brainstem. Decerebrate posturing isn't treatable directly. The only option is to treat the underlying condition that's causing it (if possible).Because people who have decerebrate posturing are most likely in a coma, they may also not be able to breathe on their own. Supportive care options, like mechanical ventilation or other treatments that help maintain body systems during a coma, are also likely.Because there are so many conditions that can cause decerebrate posturing, the treatment options vary widely. A healthcare provider is the best person to tell you about possible treatments.What are the possible complications or risks of not treating decerebrate posturing?Decerebrate posturing means that there's severe damage to your brain or something is causing major disruptions in brain activity. They can cause permanent damage, which can cause a person to lose abilities that their damaged brain areas once controlled. In the most severe cases, the conditions that can cause decerebrate posturing are deadly without treatment.Can decerebrate posturing be prevented?Many conditions that cause decerebrate posturing are preventable, or you may be able to reduce your chances of developing them. Some things you can do include:Manage your chronic conditions. Follow your healthcare provider's guidance on managing chronic conditions like diabetes, high blood pressure and epilepsy.Wear safety equipment as needed. Head injuries, especially concussions and traumatic brain injuries, are among the most common causes of decerebrate posturing. Protect your brain from injury using safety equipment, like helmets and seat belts.Eat a balanced diet. Electrolyte imbalances and nutrient deficiencies are often avoidable (or you can reduce the risk of having them). Managing what you eat can also help avoid decerebrate posturing related to many brain-related conditions, especially strokes.Stay physically active and reach and maintain a weight that's healthy for you. Your weight and how active you are can prevent or delay conditions that affect your brain. Healthcare providers can guide you on reaching and maintaining a weight that's healthy for you.Avoid substance and nonmedical drug use, and use alcohol in moderation. Substance use disorders can be an underlying cause of decerebrate posturing. Always take prescription medications exactly as directed and avoid nonmedical drug and substance use.Seek treatment for infections. Many infections that affect your brain start close by in places like your eyes, nose or ears. Don't delay treatment for infections in these areas. Prompt treatment can help you avoid the spread of infections that can lead to conditions like decerebrate posturing. Abnormal posturing is a common outcome of severe brain injury. It refers to involuntary and abnormal positioning of the body due to preserved motor reflexes. The presence of posturing after TBI suggests a grim recovery outlook. However, prompt diagnosis and treatment may help improve outcomes. To help you understand posturing after brain injury, this article will discuss: There are 2 main types of posturing that may occur after a severe traumatic brain injury: decorticate and decerebrate posturing. While each type of posturing has its characteristic features, they can present themselves differently in each individual. For example, some individuals may only show signs of abnormal posturing on one side of the body. Likewise, individuals may experience a combination of both types of posturing throughout the body. For individuals who do recover, abnormal posturing may still last for days or weeks following their severe brain injury. Both types of posturing can be caused by damage to several regions of the brain; however, they often involve some extent of damage to the brainstem. Below, we'll discuss the defining characteristics of these two types of posturing. Decerebrate Posturing. Contributed by Katherine Humphries Decerebrate posturing is caused by damage to deeper brain structures, including the midbrain, pons, and diencephalon. Of the two types of abnormal posturing that may occur after a traumatic brain injury, decerebrate posturing is much more common. Other names for decerebrate posturing include abnormal extension, decerebrate rigidity, extensor posturing, and decerebrate response. This type of posturing is characterized by: Arched head and neckStraight and extended armsBent wrists and curled fingersStraight legsToes pointed downwards Decorticate Posturing. Contributed by Katherine Humphries The second type of abnormal posturing that may occur after traumatic brain injury is called decorticate posturing. This is caused by damage to both hemispheres of the cerebral cortex, particularly if it involves damage to the internal capsules. Although rarer than decerebrate posturing, decorticate posturing is generally associated with better survival rates. Additionally, this type of posturing is more likely to affect only one side of the body (left or right) than decerebrate posturing. Decorticate posturing may also be referred to as abnormal flexion, decorticate rigidity, flexor posturing, or decorticate response. This type of posturing is characterized by: Closed handsInternally rotated legsAdducted arms that are flexed at the elbows and wristsInward turned feet Now that you understand the major distinctions between these two types of posturing, let's discuss how they are diagnosed. To diagnose an individual with abnormal posturing after brain injury, physical examination is necessary. Individuals who present with abnormal posturing are typically unconscious, in a comatose state. A physician will have the patient lie on their back with the arms relaxed at the side of the body. Then, a stimulus will be applied and the physician will observe for movement. Generally, abnormal posturing of the trunk and extremities occurs as a response to stimulation such as pain, but it may also occur without stimulation. Usually, when an individual feels pain, they will cover their hand over the source or move their body away from it. What makes abnormal posturing unique is that an individual with decerebrate posturing will extend their arm no matter where the stimulus is applied. When examining for decorticate posturing, bending of the elbows is generally slow and individuals should demonstrate normal withdrawal from the area where the stimulus is applied. The following section will discuss the prognosis of individuals who demonstrate abnormal posturing after head injury. Generally, the recovery outlook for individuals with abnormal posturing after brain injury is unpromising. However, there are instances where individuals regain consciousness and recover. It's suggested that 37% of individuals with decorticate posturing after head injury survive. In contrast, only about 10% of individuals who demonstrate decerebrate posturing survive. Additionally, it appears that individuals who are younger and admitted into the hospital within 6 hours of injury tend to be more likely to survive. Up next, we'll discuss the importance of timely treatment for abnormal posturing after brain injury. Immediate medical attention is essential for ensuring the best outcomes in individuals with abnormal posturing. Because every brain injury is unique, treatment will vary from person to person. While an individual cannot be forced awake from a coma, early intervention can help minimize the progression of damage and secondary complications. Once the initial damage is stabilized, doctors may perform a series of tests to better understand the underlying cause of the individual's brain injury and appropriately treat it. Increased muscle tone related to abnormal posturing tends to be stronger while laying on one's back, but it can decrease when sitting. As abnormal posturing may be more or less pronounced throughout the day, a physical or occupational therapist may attempt to position the individual in a sitting position when possible to limit muscle rigidity and optimize movement. Abnormal posturing after brain injury is indicative of severe damage to the brain. Individuals may demonstrate decerebrate or decorticate posturing, or a combination of both. Generally, the recovery outlook for individuals with abnormal posture is poor. However, with timely medical attention, it is possible for individuals to awaken from their coma and recover from abnormal posturing. We hope this article helped you understand the signs of abnormal posturing and what it means. Ball JW, Dains JE, Flynn JA, Solomon BS, Stewart RW. Neurologic system. In: Ball JW, Dains JE, Flynn JA, Solomon BS, Stewart RW, eds. Seidel's Guide to Physical Examination. 10th ed. St Louis, MO: Elsevier; 2023:chap 23.Bostwick TL. Altered mental status and coma. In: Bakes KM, Buchanan JA, Moreira ME, Byyny R, Pons PT, eds. Emergency Medicine Secrets. 7th ed. Philadelphia, PA: Elsevier; 2022:chap 14. Hamati AI, Felker MV. Neurological complications of systemic disease: children. In: Jankovic J, Mazziotta JC, Pomeroy SL, Newman NJ, eds. Bradley and Daroff's Neurology in Clinical Practice. 8th ed. Philadelphia, PA: Elsevier; 2022:chap 59.Papa L, Goldberg SA. Head trauma. In: Walls RM, ed. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Philadelphia, PA: Elsevier; 2023:chap 33.Page 2Cerebral angiography is done in the hospital or radiology center. You lie on an x-ray table.Your head is held still using a strap, tape, or sandbags, so you do not move it during the procedure.Before the test starts, you are given a mild sedative to help you relax.An electrocardiogram (ECG) monitors your heart activity during the test. Sticky patches, called leads, will be placed on your arms and legs. Wires connect the leads to the ECG machine. An area of your body, usually the groin or wrist, is cleaned and numbed with a numbing medicine (local anesthetic). A thin, hollow tube called a catheter is placed through an artery. The catheter is carefully moved up through the main blood vessels into an artery in the neck. X-rays help your health care provider (usually a specially trained radiologist) guide the catheter to the correct position.Once the catheter is in place, d