TREATMENT OF CEREBRAL INFARCTION pdf

1: Stroke - Diagnosis and treatment - Mayo Clinic

Cerebral Infarction- Causes, Symptoms and Treatment. 27th Jan, Cerebral infarction accounts for about 90% of strokes in the United States. According to the Centers for Disease Control and Prevention, strokes kill , Americans every year.

November 17, ; Accepted date: November 17, ; Published date: November 17, Citation: In these patients, the use of preoperative intracranial pressure monitoring has not shown utility. Currently, decompressive craniectomy has managed to reduce the mortality and morbidity of patients with malignant stroke. The clinical case of a patient who presented a malignant CVA is described below and a non-systematic review of the literature on the surgical treatment of them is performed. Keywords Stroke; Malignant infarction: Middle cerebral artery; Internal carotid artery infarction; Depressive hemicraniectomy Introduction CVD is the second cause of death in the world according to data from the World Health Organization WHO [1 , 2] Changes in the lifestyle and aging of the Uruguayan population have determined an increase in the prevalence of risk factors for the development of cardiovascular and cerebrovascular disease. In Uruguay, CVD was recognized as the leading cause of death in , with CVD causes disabling sequelae creating a functional dependency and changes in the whole family structure. Malignant CVA are a pathology with significant mortality. In the following work we discuss the advances in the surgical treatment of malignant CVA from a clinical case. Case Report A year-old male patient with a personal history of hypertension without treatment or control, smoker, and physical examination for morbid obesity. Five hours before the consultation install motor deficit of right hemicuerpo and alterations in the language. On admission examination, a vigil patient who fulfills orders with a left hemibody was observed. Aphasic mutism and right hemiplegia hemiplegia, presenting a total of 11 points on the Glasgow coma scale GCS. Cranial tomography at 5th hour from the beginning of the Cerebrovascular Accident. There is a loss of differentiation between the gray and white matter associated with a hypodense area in the territory of anterior cerebral artery and left middle cerebral artery. Intravenous fibrinolytics were not performed because they were out of time. At 17 hours after the onset of symptoms, the patient depresses consciousness, confirming eye opening to the call, does not follow orders and persists with aphasic mutism, adding a GCS of 9. The CT scan showed a large hypodense area in superficial and deep territory of the silviana artery and the anterior cerebral artery, with a mass effect due to ipsilateral ventricle compression and a 4 mm mean line deviation Figure 2. Given the clinical state of the patient and the tomographic findings, it was decided to perform a decompressive craniectomy. In the postoperative period, the patient is admitted to an intensive care unit ICU where he remains sedated and in mechanical ventilation. Upon examination, it does not present an eye opening to the call, nor gestures and locates with the left upper limb, GCS 7. Cranial Tomography at 19th hour of the Cerebrovascular Accident. Increase of the hypodense area with clear commitment of the superficial and deep territories of the Middle Cerebral Artery and Anterior Cerebral Artery to the left. Presents ipsilateral ventricle compression and deviation from the 4 mm midline. The intracranial pressure figures ICP were less than 20 mmHg in the following 24 hours. The postoperative control CT showed an area of ischemia configured in the aforementioned territories and an increase in the mass effect with respect to the previous CT scan Figure 3. At 72 hour after the onset of symptoms, ICP values reach 40 mmHg and anisocoria is installed with left mydriasis. In this situation, the control CT evidences a configured infarction of the whole territory of the internal or panhemispheric carotid artery, an increase in the mass effect with a mean line deviation of 20 mm, uncal herniation and subfalcin. Cranial Tomography at 48th hour after Cerebrovascular Accident and decompressive post-craniectomy. Ischemia configuration and increased mass effect are evidenced, with homolateral ventricle compression and deviation of the 6 mm midline. Cranial Tomography at 96th hour of the Cerebrovascular Accident. The already configured pan hemispheric infarction is appreciated. Great increase in mass effect with ipsilateral ventricle compression, 20 mm midline deviation and contralateral hydrocephalus. Note the subclinical and uncal herniation with compression of the brainstem. The encephalic parenchyma protrudes through the hemicraniectomy. The ecodoppler reported neck vessels, atheromatosis of the carotid bifurcation that extends to the internal carotid causing a subocclusive flow. A vigorous neurointensive medical treatment was performed, reversing the

mydriasis. The patient dies on the 6th day of the CVA. Currently, the term malignant CVA can be defined according to the inclusion criteria Figure 2 Cranial Tomography at 19th hour of the used in the only controlled clinical trials conducted up to the present time. According to these, we divide them based on: The clinical criteria include the sudden installation of symptoms in the territory of the MCA. Symptoms linked to other cerebral vascular territories may also be included. The evolutionary criterion implies a decrease in the level of progressive consciousness from the onset of symptoms. This depression of consciousness is observed more frequently in the first 3 days, although it can be extended until the fifth day, period of time in which the increase in edema linked to ischemia is usually observed. However, although the value of the NIHS is variable, it is accepted as valid greater than Our patient meets the clinical, evolutionary and imaging criteria to be included in the definition of malignant stroke. Clinically it debuted with sign-symptomatology suggestive of ischemia in the territory of the MCA, evolutionarily depressed consciousness passing from a GCS of 11 to 9 and imaging was a panhemispheric infarction Figure 2. In the clinical case presented, we do not have a magnetic resonance imaging MRI. The diffusion sequence in this patient could have provided information about the vascular territory involved from the beginning of the picture. The high mortality of these patients despite an excellent neurocritical treatment, has led to discuss the usefulness of surgical techniques with the general objective of improving the vital prognosis; and the specific and most important for many authors, of "saving brain function", allowing patients to be reintegrated into society with a better quality of life. It has been found that patients with a clear depression of consciousness and even with clinical and imaging elements of uncal herniation show no increase in ICP when it is monitored [14]. However, several authors emphasize the importance of ICP monitoring in the postoperative period. This not only allows us to predict the presence of complications after surgery, but also allows for adequate medical treatment in patients who, despite decompressive craniectomy, show an increase in ICP [15 , 16]. In the case of our patient, he presented an episode of increased ICP with figures of 40 mm Hg, coinciding with a left mydriasis, which regresses with the treatment established. Subsequently, there were no new ICP elevations, which did not correlate with the severe mass effect observed on CT. These works also showed a functional improvement in those patients treated surgically. The Modified Rankin Scale mRS is a scale designed to measure the degree of disability of neurological patients. It is considered that a scale between 0 and 3 or 4 is a good functional response. These results are compelling. This determines a necessary number of treat NNT of 2. That is, it is necessary to treat 2 patients with decompressive craniectomy so that one year at least one of them will be walking with help. Although there is currently acceptance of the benefit of decompressive craniectomy in patients under 60 years of age, some controversial points persist. The first element to discuss is that it occurs with patients who present with a malignant cerebrovascular accident in the dominant hemisphere, as in the case of our patient. The three controlled clinical trials to which we have mentioned, show that there are no differences in terms of the functional evolution of patients based on the cerebral hemisphere involved. It has been found that symptoms, such as space hemineglígence, can be as invalidating for patients as aphasia. Therefore, the evidence demonstrates the benefit of surgical treatment regardless of the cerebral hemisphere involved [6 , 8 , 9 , 11 , 12]. The second controversial point is age. This study includes patients between 61 and 82 years. There was no death in the group between 61 and 70 years [18]. These studies show that surgical treatment in patients between 61 and 70 years should be taken into account, analyzing each case in particular. As a third controversial point, we must analyze which is the best opportunity for performing surgical treatment. There is no discussion that early treatment is the one that most benefits these patients. However, these results are relative, since as we know the edema occurs between the day of the onset of symptoms and the fifth day. Those patients who present an initial depression of consciousness beyond the first 48 hours could also benefit from surgery. Finally, the existing discussion on the increased risk of hemorrhage is highlighted in patients in whom intravenous or intra-arterial fibrinolytics were performed. Fibrinolytics promote the transformation of plasminogen into plasmin, thereby accelerating the degradation of the fibrin clot. The plasminogen recombinant tissue activator r-TPA , used in our country, has a half-life of 5 min, however, it is considered that the fibrinolytic effect persists for more than 24 hours Three publications have been published in recent years that demonstrate that the performance of intravenous or intra-arterial

fibrinolytics does not increase the risk of hemorrhagic complications in patients undergoing decompressive craniectomies, even when this is done in the first 24 hours after the administration of these drugs [19 - 21]. Despite the new evidence obtained, there is still a great lack of knowledge on the part of doctors of all specialties about the benefits of decompressive craniectomy. In the case presented, because it is a patient under 60 years of age, who is in the first 24 hours after the installation of the symptoms and with a GCS 9 to correct for aphasic mutism, the indication for surgical treatment is clearly justified. As we have analyzed, a stroke of the dominant hemisphere does not contraindicate the surgical treatment. Other surgical techniques Another surgical tactic mentioned in the literature is the resection of the ischemic cerebral parenchyma [23 , 24]. Kostov studied the benefit of infartectomy with respect to decompressive craniectomy. Although it is a work with a low number of patients, it shows that there is no significant change in mortality, but with a better prognosis in the functional of the patients in whom an infartectomy was performed. However, it tends to be more conservative in patients with strokes of the dominant hemisphere, performing decompressive craniectomies, which could have a translation in the functional differences observed [24]. Other authors state that the infartectomy could injure penumbra areas, negatively affecting the functional evolution of the patients. We emphasize that some authors propose the realization of a temporal lobectomy with resection of the hippocampus uncus. With the aim of avoiding compression on the brainstem [25 , 26]. Undoubtedly new works are needed that show the possible benefits of these treatments. Prognostic factors The most important prognostic factors, in patients with a malignant cerebrovascular accident, who undergo surgical treatment, can be separated into clinical and imaging. The most recognized clinical criteria are age under 60 years, a relatively good GCS, the absence of pupillary changes and the time of evolution of symptoms. The most important imaging criterion as a predictor of mortality is the stroke volume greater than cc. A deviation of the median line greater than 10mm after decompressive craniectomy and the involvement of more than one vascular territory are also described [22 , 27 , 26 , 28 , 29]. In the case mentioned, the patient presents clinical elements, which translate a good prognosis. However, the presence of a CVA with a volume of cc, three times the value considered as a limit to predict a poor prognosis, the deviation of the average line of 20 mm despite the decompressive craniectomy and the presence of a compromise of the ACA and MCA are all elements that significantly increase the probability of death of the patient [30]. Conclusion The studies carried out in Europe in the last decade have made clear the benefit of decompressive craniectomy in the treatment of patients under 60 years of age with stroke, even with a commitment from the dominant hemisphere. However, for many neurosurgeons, treatment is still controversial in patients over 60 years of age, especially if we take into account the poor functional response shown by these patients.

TREATMENT OF CEREBRAL INFARCTION pdf

2: Stroke: MedlinePlus Medical Encyclopedia

Treatment for Cerebral Infarction The effects of a stroke may be irreversible, making it vital to recognize the signs and seek immediate help. To prevent permanent damage or death, doctors must first address the blood flow to the brain.

Quick treatment is needed. Call or your local emergency number right away or seek urgent medical care at the first signs of a stroke. People who are having stroke symptoms need to get to a hospital as quickly as possible. If the stroke is caused by a blood clot, a clot-busting drug may be given to dissolve the clot. The sooner this treatment is started, the better the chance of a good outcome. Other treatments given in the hospital depend on the cause of the stroke. Blood thinners such as heparin, warfarin Coumadin , aspirin, or clopidogrel Plavix Medicine to control risk factors, such as high blood pressure, diabetes, and high cholesterol Special procedures or surgery to relieve symptoms or prevent more strokes Nutrients and fluids Physical therapy, occupational therapy, speech therapy, and swallowing therapy will all begin in the hospital. If the person has severe swallowing problems, a feeding tube in the stomach gastrostomy tube will likely be needed. The goal of treatment after a stroke is to help you recover as much function as possible and prevent future strokes. Recovery from your stroke will begin while you are still in the hospital or at a rehabilitation center. It will continue when you go home from the hospital or center. Be sure to follow up with your health care provider after you go home. Outlook Prognosis How well a person does after a stroke depends on: The type of stroke How much brain tissue is damaged What body functions have been affected How quickly treatment is given Problems moving, thinking, and talking often improve in the weeks to months after a stroke. Many people who have had a stroke will keep improving in the months or years after their stroke. Over half of people who have a stroke are able to function and live at home. Others are not able to care for themselves. If treatment with clot-busting drugs is successful, the symptoms of a stroke may go away. However, people often do not get to the hospital soon enough to receive these drugs, or they cannot take these drugs because of a health condition. People who have a stroke from a blood clot ischemic stroke have a better chance of surviving than those who have a stroke from bleeding in the brain hemorrhagic stroke. The risk for a second stroke is highest during the weeks or months after the first stroke. The risk begins to decrease after this period. When to Contact a Medical Professional Stroke is a medical emergency that needs to be treated right away. The most important action to take is to call right away for emergency assistance. Ask the person to smile. Check if one side of the face droops. Ask the person to raise both arms. See if one arm drifts downward. Ask the person to repeat a simple sentence. Check if words are slurred and if the sentence is repeated correctly. If a person shows any of these symptoms, time is essential. It is important to get to the hospital as quickly as possible. Prevention Reducing your stroke risk factors lessens your chance of having a stroke.

TREATMENT OF CEREBRAL INFARCTION pdf

3: Cerebral infarction - Wikipedia

Cerebral infarction is a medical emergency and accordingly, patients with suspected cerebral infarction have priority in the emergency room! Below, the diagnostic approach is described as it is suggested in clinical practice.

If one of the above diagnoses, it is necessary to take measures for the prevention of ischemic stroke. Of the external factors that lead to cerebral infarction, emit harmful habits and certain medications, including oral contraceptives. Excess weight is accompanied by elevated levels of cholesterol in the blood. Sometimes cholesterol plaques break away from the vessel walls, leading to blockage of blood vessels. The age of fifty years old also belongs to the risk factors of stroke. Cerebral infarction is often the result of the experience of myocardial infarction. First aid When the first signs of stroke you must call an ambulance. In due time rendered medical aid often saves lives and helps avoid disability. Before the ambulance need to make the patient as comfortable as possible and to provide him peace. To stroke can cause physical stress or emotional distress. It is important to eliminate safety hazards, and to reassure the patient. Better if the room with the patient will be fresh and cool. To the person with stroke was easier to breathe, he needs to unbutton a collar, a belt or take off their tight clothes. The patient should measure the blood pressure. Such data will be useful for ambulance crews who will be able to assess the dynamics of the state. Cerebral infarction is often accompanied by vomiting. This applies to the actions of ambulance crews, which must maintain respiratory function and blood circulation of the patient before arrival to the hospital. Diagnosis To confirm the diagnosis in the hospital the patient undergoes magnetic resonance and computed tomography MRI and CT. These instrumental methods of diagnosis help to determine the extent of damage and possible consequences. MRI has a number of limitations to the use of the patient has a pacemaker, metal implants , so this method is not always applicable. In the first days after an attack is more often used CT scan. This method of diagnosis faster gives a General idea about the nature of the stroke, which allows to prescribe treatment. A more accurate method consider MRI performed on a modern scanner. This method is preferable to assess the prescribed treatment, but it is more expensive than CT. In addition to the instrumental methods of the study, the patient undergoes biochemical and clinical blood tests to determine the platelet count, glucose level and so on. Common consequences The consequences of brain infarction depend on the extent of destruction of brain tissue, severity of the disease and the presence of associated pathologies and diseases. This is due to the fact that stolova Department is a large number of vital nerve endings. Given the nature of the lesions is possible to complete paralysis. Often, this stroke ends in death, as in the brain stem are the nervous centers responsible for respiratory function. Less dangerous to life, but also with serious consequences is ischemia of the cerebellum, which leads to depression of consciousness and coma. In connection with the close of the cerebellum and brain stem edema in stroke in the cerebellum often spreads to the trunk. This also is critical to the life of the patient. Edema is most common among the complications after stroke, and this very condition often leads to death of the patient in the first week after attack. In addition, there are often stagnant pneumonia due to poor ventilation, acute heart failure and pulmonary embolism. Drug treatment and recovery Timely initiation of medication treatment is important for recovery of body functions. Treatment of brain infarction is divided into basic and specific. The basic treatment is aimed at maintaining vital functions: And also to prevent the development of infections, ulcers, bedsores and maintaining a normal body temperature and blood pressure. Specific treatment will include the procedure of thrombolysis, anticoagulants and antiplatelet agents. They are used to restore blood flow in the affected area to avoid complications. Treatment with anticoagulants relates to therapy with unproven efficacy and has a number of dangerous complications. If their appointment is necessary to monitor the indicators of blood coagulation. Antiplatelet agents aspirin have virtually no contraindications and remains the basic therapeutic means for the relief of stroke. The procedure of thrombolysis is time-limited perhaps only in the first three hours after the attack and not always available. It is performed only in specialized clinics with neurological direction. To improve blood circulation and normalize the viscosity and appoint polyglukin reopoligljukin. Immediately after a stroke patient is prescribed neurotropic drugs. This group of drugs of new generation is represented by several types, each of which has

specific effects on brain cells. Nootropics Semax, Ceraxon improve the transmission of nerve impulses. The antioxidants Glycine, Mexidol contain the necessary for the brain vitamins and amino acids. The neuroprotective agents are also several drugs that improve cerebral blood circulation and relieves spasm of blood vessels. However, the occurrence of these conditions tells about the disturbances in cerebral circulation, which can bring on an attack is already a massive stroke. It includes diet, therapeutic exercise and taking prescription medications. Diet excludes the consumption of fatty foods, smoked meats, chocolate, coffee and strong black tea. All meals should be balanced and rich in vitamins and minerals. That is, in the daily menu should include fruits and vegetables. The amount of alcohol consumed per day of water is expected to reach two liters. Therapeutic exercise includes dosed physical load and sport walking. For a patient who survived a heart attack of the brain, will be useful for Hiking in the fresh air. Rehabilitative and preventive drugs include diuretics, ACE inhibitors, statins, antiplatelet agents. Diuretics reduce blood pressure, some drugs have a vasodilating effect. ACE inhibitors have a positive effect on the functioning of the heart. Statins are used to lower cholesterol in the blood. Antiplatelet agents prevent the formation of blood clots. The dosage and combination of therapeutic drugs are selected individually for each patient. Complex drug therapy needs to consider the nature of stroke, the extent of existing lesions and resulting complications. Well-chosen complex of preventive measures increases the life expectancy of the patient.

TREATMENT OF CEREBRAL INFARCTION pdf

4: Stroke - Symptoms and causes - Mayo Clinic

A cerebral infarction is an area of necrotic tissue in the brain resulting from a blockage or narrowing in the arteries supplying blood and oxygen to the brain. The restricted oxygen due to the restricted blood supply causes an ischemic stroke that can result in an infarction if the blood flow is not restored within a relatively short period of time.

Cardiovascular disease, including heart failure, heart defects, heart infection or abnormal heart rhythm Personal or family history of stroke, heart attack or transient ischemic attack. Other factors associated with a higher risk of stroke include: Age â€”People age 55 or older have a higher risk of stroke than do younger people. Race â€” African-Americans have a higher risk of stroke than do people of other races. Sex â€” Men have a higher risk of stroke than women. Hormones â€ — use of birth control pills or hormone therapies that include estrogen, as well as increased estrogen levels from pregnancy and childbirth. Complications A stroke can sometimes cause temporary or permanent disabilities, depending on how long the brain lacks blood flow and which part was affected. Paralysis or loss of muscle movement. You may become paralyzed on one side of your body, or lose control of certain muscles, such as those on one side of your face or one arm. Physical therapy may help you return to activities affected by paralysis, such as walking, eating and dressing. Difficulty talking or swallowing. A stroke might affect control of the muscles in your mouth and throat, making it difficult for you to talk clearly dysarthria , swallow dysphagia or eat. You also may have difficulty with language aphasia , including speaking or understanding speech, reading, or writing. Therapy with a speech-language pathologist might help. Memory loss or thinking difficulties. Many people who have had strokes experience some memory loss. Others may have difficulty thinking, making judgments, reasoning and understanding concepts. People who have had strokes may have more difficulty controlling their emotions, or they may develop depression. Pain, numbness or other strange sensations may occur in the parts of the body affected by stroke. For example, if a stroke causes you to lose feeling in your left arm, you may develop an uncomfortable tingling sensation in that arm. People also may be sensitive to temperature changes, especially extreme cold, after a stroke. This complication is known as central stroke pain or central pain syndrome. This condition generally develops several weeks after a stroke, and it may improve over time. But because the pain is caused by a problem in your brain, rather than a physical injury, there are few treatments. Changes in behavior and self-care ability. People who have had strokes may become more withdrawn and less social or more impulsive. They may need help with grooming and daily chores. As with any brain injury, the success of treating these complications varies from person to person. The follow-up care you receive in the hospital and afterward also may play a role as well. Many stroke prevention strategies are the same as strategies to prevent heart disease. In general, healthy lifestyle recommendations include: Controlling high blood pressure hypertension. This is one of the most important things you can do to reduce your stroke risk. Exercising, managing stress, maintaining a healthy weight and limiting the amount of sodium and alcohol you eat and drink can all help to keep high blood pressure in check. In addition to recommending lifestyle changes, your doctor may prescribe medications to treat high blood pressure. Lowering the amount of cholesterol and saturated fat in your diet. Eating less cholesterol and fat, especially saturated fat and trans fats, may reduce the plaque in your arteries. Smoking raises the risk of stroke for smokers and nonsmokers exposed to secondhand smoke. Quitting tobacco use reduces your risk of stroke. You can manage diabetes with diet, exercise, weight control and medication. Maintaining a healthy weight. Being overweight contributes to other stroke risk factors, such as high blood pressure, cardiovascular disease and diabetes. Losing as little as 10 pounds may lower your blood pressure and improve your cholesterol levels. Eating a diet rich in fruits and vegetables. A diet containing five or more daily servings of fruits or vegetables may reduce your risk of stroke. Following the Mediterranean diet, which emphasizes olive oil, fruit, nuts, vegetables and whole grains, may be helpful. Aerobic or "cardio" exercise reduces your risk of stroke in many ways. Exercise can lower your blood pressure, increase your level of high-density lipoprotein cholesterol, and improve the overall health of your blood vessels and heart. It also helps you lose weight, control diabetes and reduce stress. Gradually work up to 30 minutes of activity â€” such as walking, jogging, swimming or bicycling â€ — on most, if not all, days of the

week. Drinking alcohol in moderation, if at all. Alcohol can be both a risk factor and a protective measure for stroke. Heavy alcohol consumption increases your risk of high blood pressure, ischemic strokes and hemorrhagic strokes. Treating obstructive sleep apnea OSA. Your doctor may recommend an overnight oxygen assessment to screen for OSA â€" a sleep disorder in which the oxygen level intermittently drops during the night. Treatment for OSA includes oxygen at night or wearing a small device in your mouth to help you breathe. Certain street drugs, such as cocaine and methamphetamines, are established risk factors for a TIA or a stroke. Cocaine reduces blood flow and can narrow the arteries. Platelets are cells in your blood that form clots. Anti-platelet drugs make these cells less sticky and less likely to clot. The most commonly used anti-platelet medication is aspirin. Your doctor can help you determine the right dose of aspirin for you. Your doctor might also consider prescribing Aggrenox, a combination of low-dose aspirin and the anti-platelet drug dipyridamole to reduce the risk of blood clotting. These drugs, which include heparin and warfarin Coumadin, Jantoven , reduce blood clotting. Heparin is fast acting and may be used over a short period of time in the hospital. Slower acting warfarin may be used over a longer term. Your doctor may prescribe these drugs if you have certain blood-clotting disorders, certain arterial abnormalities, an abnormal heart rhythm or other heart problems. Other newer blood thinners may be used if your TIA or stroke was caused by an abnormal heart rhythm.

TREATMENT OF CEREBRAL INFARCTION pdf

5: Cerebral infarcts

Infarction refers to death of tissue. A cerebral infarction, or stroke, is a brain lesion in which a cluster of brain cells die when they don't get enough blood.

Cerebral infarction sequelae is not an incurable disease, in addition to scientific treatment, the rehabilitation exercise is also important. Abundant functional exercise could speed up the recovery with remarkable improvements. The following caring notes for cerebral infarction disease are for your reference: Massage and passive exercise. For the early bedridden patients, family members should do massage for the paralyzed limbs to prevent muscle atrophy and joint stiffness. Patient with slight movement abilities can do some lifting and extending exercises for legs and knees to prevent cardiovascular dysfunction. Gradually start walking and doing upper limbs exercise. After basic consolidation exercise in the first stage, patients may try to stay in a standing position by supports. They can make left and right turns or squat with their body, or other activities such as stepping, lifting up two legs in turns and holding the edge of table and bed for small walk. Patients should intentionally add more weight when doing excercises for limbs and increase exercise frequency gradually. In addition, patients could do more lifting, elevation and upthrow to improve blood circulation and eliminate swelling. Practising the ability of daily life for independency. The daily life training can be carried out under the guidance of medical staff or the assistance of families, the following common items for your reference: Start with intact hand to wash face, mouth, hair and then gradually get assist from the suffering hand. When wearing, paralyzed side first and then health side. Pants wearing should follow the same order. Bath time should not be too long, but frequency could be gradually increase. Then gradually allow patients to try by themselves. Patients with dysphagia need nasal feeding, then patients could be trained with a nasogastric tube to eat. If patients have constipation, urinary retention or incontinence, they should be given the appropriate treatment timely. In addition, planting flowers and other cerebral infarction rehabilitation exercises are also adviced.

TREATMENT OF CEREBRAL INFARCTION pdf

6: Ischemic Strokes (Clots)

Full text Full text is available as a scanned copy of the original print version. Get a printable copy (PDF file) of the complete article (K), or click on a page image below to browse page by page.

Classification[edit] There are various classification systems for a cerebral infarction. These four entities predict the extent of the stroke, the area of the brain affected, the underlying cause, and the prognosis. If the infarct is located in primary motor cortex, contralateral hemiparesis is said to occur. With brainstem localization, brainstem syndromes are typical: Infarctions will result in weakness and loss of sensation on the opposite side of the body. Physical examination of the head area will reveal abnormal pupil dilation, light reaction and lack of eye movement on opposite side. If the infarction occurs on the left side brain, speech will be slurred. Reflexes may be aggravated as well. Risk factors[edit] Major risk factors for cerebral infarction are generally the same as for atherosclerosis: It is also possible to calculate the risk of stroke in the next decade based on information gathered through the Framingham Heart Study. In thrombotic ischemic stroke, a thrombus forms and blocks blood flow. This clump of platelets interacts with fibrin to form a platelet plug. Thrombotic ischemia can occur in large or small blood vessels. In large vessels, the most common causes of thrombi are atherosclerosis and vasoconstriction. In small vessels, the most common cause is lipohyalinosis. Atheroma formation can also cause small vessel thrombotic ischemic stroke. An embolus is most frequently a thrombus, but it can also be a number of other substances including fat e. The embolus may be of cardiac origin due to Atrial fibrillation , Patent foramen ovale or from atherosclerotic plaque of another or the same large artery. Cerebral artery gas embolism e. The blockage will also appear on the angiogram. Treatment[edit] In last decade, similar to myocardial infarction treatment, thrombolytic drugs were introduced in the therapy of cerebral infarction. The use of intravenous rtPA therapy can be advocated in patients who arrive to stroke unit and can be fully evaluated within 3 h of the onset. If cerebral infarction is caused by a thrombus occluding blood flow to an artery supplying the brain, definitive therapy is aimed at removing the blockage by breaking the clot down thrombolysis , or by removing it mechanically thrombectomy. The more rapidly blood flow is restored to the brain, the fewer brain cells die. Another intervention for acute cerebral ischaemia is removal of the offending thrombus directly. This is accomplished by inserting a catheter into the femoral artery , directing it into the cerebral circulation , and deploying a corkscrew-like device to ensnare the clot, which is then withdrawn from the body. Mechanical embolectomy devices have been demonstrated effective at restoring blood flow in patients who were unable to receive thrombolytic drugs or for whom the drugs were ineffective, [13] [14] [15] [16] though no differences have been found between newer and older versions of the devices. Angioplasty and stenting have begun to be looked at as possible viable options in treatment of acute cerebral ischaemia. If studies show carotid stenosis, and the patient has residual function in the affected side, carotid endarterectomy surgical removal of the stenosis may decrease the risk of recurrence if performed rapidly after cerebral infarction. Later publications distinguish between "syndrome" and "infarct", based on evidence from imaging. See Internet Stroke Center. Definitions for use in a multicenter clinical trial. J Stroke Cerebrovasc Dis.

TREATMENT OF CEREBRAL INFARCTION pdf

7: Cerebral Infarction | Clinician's Brief

Introduction: Cerebral Infarction Description of Cerebral Infarction. Cerebral Infarction: The formation of an area of necrosis in the cerebrum caused by an insufficiency of arterial or venous blood flow.

They also need to rule out other possible causes of your symptoms, such as a brain tumor or a drug reaction. Your doctor may use several tests to determine your risk of stroke, including: Stroke consultation Stroke consultation at Mayo Clinic CT scan of brain tissue damaged by stroke CT scan of brain tissue damaged by stroke CT scan showing brain tissue damaged by stroke Cerebral angiogram Cerebral angiogram A cerebral angiogram showing a carotid aneurysm associated with stroke. Your doctor then will evaluate whether these symptoms are still present. Your doctor will want to know what medications you take and whether you have experienced any head injuries. Your doctor will check your blood pressure and use a stethoscope to listen to your heart and to listen for a whooshing sound bruit over your neck carotid arteries, which may indicate atherosclerosis. Your doctor may also use an ophthalmoscope to check for signs of tiny cholesterol crystals or clots in the blood vessels at the back of your eyes. You may have several blood tests, which tell your care team how fast your blood clots, whether your blood sugar is abnormally high or low, whether critical blood chemicals are out of balance, or whether you may have an infection. Computerized tomography CT scan. A CT scan uses a series of X-rays to create a detailed image of your brain. A CT scan can show a hemorrhage, tumor, stroke and other conditions. Doctors may inject a dye into your bloodstream to view your blood vessels in your neck and brain in greater detail computerized tomography angiography. There are different types of CT scans that your doctor may use depending on your situation. Magnetic resonance imaging MRI. An MRI uses powerful radio waves and magnets to create a detailed view of your brain. An MRI can detect brain tissue damaged by an ischemic stroke and brain hemorrhages. Your doctor may inject a dye into a blood vessel to view the arteries and veins and highlight blood flow magnetic resonance angiography, or magnetic resonance venography. In this test, sound waves create detailed images of the inside of the carotid arteries in your neck. This test shows buildup of fatty deposits plaques and blood flow in your carotid arteries. In this test, your doctor inserts a thin, flexible tube catheter through a small incision, usually in your groin, and guides it through your major arteries and into your carotid or vertebral artery. Then your doctor injects a dye into your blood vessels to make them visible under X-ray imaging. This procedure gives a detailed view of arteries in your brain and neck. An echocardiogram uses sound waves to create detailed images of your heart. An echocardiogram can find a source of clots in your heart that may have traveled from your heart to your brain and caused your stroke. You may have a transesophageal echocardiogram. In this test, your doctor inserts a flexible tube with a small device transducer attached into your throat and down into the tube that connects the back of your mouth to your stomach esophagus. Because your esophagus is directly behind your heart, a transesophageal echocardiogram can create clear, detailed ultrasound images of your heart and any blood clots. Ischemic stroke To treat an ischemic stroke, doctors must quickly restore blood flow to your brain. Emergency treatment with medications. Therapy with clot-busting drugs must start within 4. Quick treatment not only improves your chances of survival but also may reduce complications. You may be given: Intravenous injection of tissue plasminogen activator tPA. This injection of recombinant tissue plasminogen activator tPA , also called alteplase, is considered the gold standard treatment for ischemic stroke. An injection of tPA is usually given through a vein in the arm. This potent clot-busting drug ideally is given within three hours. In some instances, tPA can be given up to 4. This drug restores blood flow by dissolving the blood clot causing your stroke, and it may help people who have had strokes recover more fully. Your doctor will consider certain risks, such as potential bleeding in the brain, to determine if tPA is appropriate for you. Doctors sometimes treat ischemic strokes with procedures performed directly inside the blocked blood vessel. These procedures must be performed as soon as possible, depending on features of the blood clot: Medications delivered directly to the brain. Doctors may insert a long, thin tube catheter through an artery in your groin and thread it to your brain to deliver tPA directly into the area where the stroke is occurring. This is called intra-arterial thrombolysis. The time window for this treatment is somewhat longer than for intravenous tPA,

but is still limited. Removing the clot with a stent retriever. Doctors may use a catheter to maneuver a device into the blocked blood vessel in your brain and trap and remove the clot. Several large and recent studies suggest that, depending on the location of the clot and other factors, endovascular therapy might be the most effective treatment. Endovascular therapy has been shown to significantly improve outcomes and reduce long-term disability after ischemic stroke. Doctors sometimes recommend the following procedures to prevent a stroke. Options will vary depending on your situation: In a carotid endarterectomy, a surgeon removes plaques from arteries that run along each side of your neck to your brain carotid arteries. In this procedure, your surgeon makes an incision along the front of your neck, opens your carotid artery and removes plaque that blocks the carotid artery. Your surgeon then repairs the artery with stitches or a patch made from a vein or artificial material graft. The procedure may reduce your risk of ischemic stroke. However, a carotid endarterectomy also involves risks, especially for people with heart disease or other medical conditions. In an angioplasty, a surgeon usually accesses your carotid arteries through an artery in your groin. Here, your surgeon can gently and safely navigate to the carotid arteries in your neck. A balloon is then inflated to expand the narrowed artery. Then a stent can be inserted to support the opened artery. Hemorrhagic stroke Emergency treatment of hemorrhagic stroke focuses on controlling your bleeding and reducing pressure in your brain. You might also need surgery to help reduce future risk. You may also be given drugs to lower pressure in your brain intracranial pressure , lower your blood pressure, prevent vasospasm or prevent seizures. Once the bleeding in your brain stops, treatment usually involves supportive medical care while your body absorbs the blood. Healing is similar to what happens while a bad bruise goes away. If the area of bleeding is large, your doctor may perform surgery to remove the blood and relieve pressure on your brain. Surgical blood vessel repair. Surgery may be used to repair blood vessel abnormalities associated with hemorrhagic strokes. Your doctor may recommend one of these procedures after a stroke or if an aneurysm or arteriovenous malformation AVM or other type of vascular malformation caused your hemorrhagic stroke: A surgeon places a tiny clamp at the base of the aneurysm, to stop blood flow to it. This clamp can keep the aneurysm from bursting, or it can prevent re-bleeding of an aneurysm that has recently hemorrhaged. A surgeon inserts a catheter into an artery in your groin and guides it to your brain using X-ray imaging. Tiny detachable coils are guided into the aneurysm aneurysm coiling. The coils fill the aneurysm, which blocks blood flow into the aneurysm and causes the blood to clot. Using multiple beams of highly focused radiation, stereotactic radiosurgery is an advanced minimally invasive treatment used to repair vascular malformations. Stroke recovery and rehabilitation Brain hemisphere connections Brain hemisphere connections After emergency treatment, stroke care focuses on helping you recover as much function as possible and return to independent living. The impact of your stroke depends on the area of the brain involved and the amount of tissue damaged. If your stroke affected the right side of your brain, your movement and sensation on the left side of your body may be affected. If your stroke damaged the brain tissue on the left side of your brain, your movement and sensation on the right side of your body may be affected. Brain damage to the left side of your brain may cause speech and language disorders. Most stroke survivors receive treatment in a rehabilitation program. Your doctor will recommend the most rigorous therapy program you can handle based on your age, overall health and degree of disability from your stroke. Your doctor will take into consideration your lifestyle, interests and priorities, and the availability of family members or other caregivers. Your rehabilitation program may begin before you leave the hospital. After discharge, you might continue your program in a rehabilitation unit of the same hospital, another rehabilitation unit or skilled nursing facility, an outpatient unit, or your home. Depending on your condition, your treatment team may include: Doctor trained in brain conditions neurologist Rehabilitation doctor physiatrist.

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8: Dengzhanhua preparations for acute cerebral infarction | Cochrane

A theoretical drawback of blood pressure reduction is that elevated blood pressure may counteract dysfunctional cerebral autoregulation from stroke, but limited evidence suggests that antihypertensive treatment in acute stroke does not change cerebral perfusion.

Does one side of the face droop? If a person holds both arms out, does one drift downward? Is their speech abnormal or slurred? This sound, which is called a bruit, indicates abnormal blood flow. Your doctor may also perform diagnostic tests to discover the cause of the stroke and pinpoint its location. These tests may include one or more of the following: Your healthcare provider may want to test your blood for clotting time, blood sugar levels, or infection. These can all affect the likelihood and progression of a stroke. An angiogram, which involves adding a dye to your blood and taking an X-ray of your head, can help your doctor find the blocked or hemorrhaged blood vessel. This test uses sound waves to create images of the blood vessels in your neck. A CT scan is often performed soon after symptoms of a stroke develop. The test can help your provider find the problem area or other problems that might be associated with stroke. This imaging technique uses sound waves to create a picture of your heart. It can help your provider find the source of blood clots. This is an electrical tracing of your heart. This will help your healthcare provider determine if an abnormal heart rhythm is the cause of a stroke. The goal of treatment for ischemic stroke, for instance, is to restore the blood flow. Treatments for hemorrhagic stroke are aimed at controlling the bleeding. Ischemic stroke treatment To treat an ischemic stroke, you may be given a clot-dissolving drug or a blood thinner. You may also be given aspirin to prevent a second stroke. Emergency treatment for this type of stroke may include injecting medicine into the brain or removing a blockage with a procedure. Hemorrhagic stroke treatment For a hemorrhagic stroke , you may be given a drug that lowers the pressure in your brain caused by the bleeding. If the bleeding is severe, you may need surgery to remove excess blood. The length of recovery varies depending on how severe the stroke was. This can include speech therapy or occupational therapy, or work with a psychiatrist, neurologist, or other healthcare professional. Your long-term outlook after a stroke depends on a few factors: Common complications resulting from a stroke include difficulty speaking, swallowing, moving, or thinking. These can improve over the weeks, months, and even years after a stroke. Prevention of a cerebrovascular accident There are many risk factors for having a stroke, including diabetes , atrial fibrillation , and hypertension high blood pressure. Correspondingly, there are many measures you can take to help prevent stroke. Preventive measures for stroke are similar to the actions that you would take to help prevent heart disease. Here are a few ways to reduce your risk: Maintain normal blood pressure. Limit saturated fat and cholesterol intake. Refrain from smoking, and drink alcohol in moderation. Eat a diet rich in vegetables and fruits. Possible preventive medications for stroke include drugs that thin the blood and prevent clot formation.

9: Rehabilitation Notes Of Cerebral Infarction

Also called ischemic stroke, a cerebral infarction occurs as a result of disrupted blood flow to the brain due to problems with the blood vessels that supply it.

Hypercoagulability Factor V Leiden, Prothrombin A mutation, antiphospholipid antibody syndrome Inherited metabolic disorders Fabry disease, homocystinuria, mitochondrial disorders Fibromuscular dysplasia and other angiopathies Severe atherosclerosis Severe atherosclerosis of cerebral arteries. Atherosclerosis and thrombosis Severe atherosclerosis and thrombosis of the basilar artery A large proportion of infarcts are caused by atherosclerosis of large arteries, alone or with superimposed thrombosis. Atherosclerosis involves the circle of Willis and large leptomeningeal arteries and extends into their smaller branches. The process of lipid accumulation is accompanied by an inflammatory reaction involving lymphocytes and macrophages. Atheromatous plaques may cause narrowing or occlusion of the vascular lumen by themselves or after rupture and thrombosis. Cholesterol crystals from ruptured plaques may embolize distal vessels. Small vessel disease Small vessel disease in a patient with diabetes. The abnormal vessels are thick and homogeneous. Small vessel disease includes atherosclerosis of small arteries but refers more specifically to lipohyalinosis and hyaline atreriolosclerosis, vascular lesions that are seen primarily in hypertension and diabetes but occur also in old age without these predisposing conditions. Affected vessels become thickened, and the normal components of their walls are replaced by a homogeneous, glassy hyaline substance, composed of collagen and other proteins. Foamy macrophages are present in lipohyalinosis. The pathogenesis of this change varies: Its effects are narrowing of the lumen and tortuosity, which lengthens the distance blood has to travel to perfuse its targets. Ischemia, resulting from these processes, causes small infarcts lacunar infarcts and diffuse loss of axons and myelin in the white matter leukoaraiosis-thinning out of the white matter. Multiple infarcts and leukoencephalopathy cause dementia. In addition, loss of elasticity from destruction of smooth muscle leads to development of small aneurysms and makes vessels fragile, resulting in microbleeds and large catastrophic hemorrhages, which occur spontaneously or after trivial trauma. See also genetic angiopathies further on. According to some authors, embolism is the most frequent cause of ischemic infarction. Most emboli are fragments of blood clots that originate in the heart or major vessels. Conditions causing cardiac emboli include myocardial infarcts, atrial fibrillation and other arrhythmias, rheumatic heart disease, bacterial and non-bacterial endocarditis, prosthetic valves, mitral valve prolapse, atrial myxoma, calcified mitral annulus, and cardiomyopathy. An embolus cannot be distinguished grossly or microscopically from a locally formed thrombus. An infarct is assumed to be embolic if it is hemorrhagic, there is a source of emboli, there are multiple infarcts of the brain and other organs kidney, spleen , and there is no atherosclerosis or other vascular disease. Some emboli consist of atheromatous material that is detached from ulcerated atheromas of the aorta or carotid arteries. Vascular manipulation angiography, carotid endarterectomy may cause atheromatous embolism. Rarer causes of embolism are fat, air, and tumor emboli. Unlike atherothrombotic infarcts, which may evolve within hours or days, embolic infarcts have an abrupt onset. Vasculitis CNS vasculitis can be classified under the following categories: Temporal giant cell arteritis Giant cell temporal arteritis. Disruptions of the elastic lamina with inflammation and giant cells. Aspergillus arteritis Aspergillus arteritis. A special stain demonstrates organisms invading the vessel wall. Mucor arteritis of the basilar artery and pontine infarct Patient with leukemia and mucormycosis. The basilar artery is thrombosed due to invasion by fungi. The pons is infarcted and is green because the patient was jaundiced. Systemic vasculitis with CNS involvement: The most common of these entities is giant cell temporal arteritis GCA which is more frequent in older people and women and is associated with polymyalgia rheumatica. GCA is also called temporal arteritis because it frequently involves the temporal artery. Biopsy of the temporal artery is done for diagnosis. However, GCA affects the aorta and other major extracranial and, less frequently, intracranial branches. Involvement of the ophthalmic artery causes visual loss in a significant number of cases. GCA is a T-cell mediated autoimmune condition that affects medium-size and large arteries. Lymphocytes and multinucleated giant cells infiltrate the vessel wall, disrupt the internal elastic lamina, and cause narrowing and thrombosis. Infectious bacterial,

fungal, spirochetal, viral ; collagen-vascular disease SLE, rheumatoid arthritis, Behset disease ; drug-induced vasculitis. Fungal vasculitis is most frequently caused by aspergillus and mucor. Cerebral vasculitis Cerebral vasculitis involving a small cortical artery. Intense inflammation in and around the vessel wall. The presence of neurologic or psychiatric deficits, angiographic or pathological documentation of vasculitis, and absence of evidence of systemic or secondary vasculitis. Granulomatous PACNS affects small and medium-size leptomeningeal and cortical vessels and causes headaches, seizures, focal deficits, and encephalopathy. Affected vessels may have amyloid deposits, in addition to epithelioid cell granulomas and giant cells. There is no vasculitis outside the CNS. The nongranulomatous form shows lymphocytic inflammation. PACNS affecting small vessels presents with focal or diffuse neurologic abnormalities and enhancing meningeal and parenchymal lesions and is not evident on angiography. The clinical picture overlaps encephalitis. The diagnosis of such cases can be made by brain biopsy, which shows lymphocytic inflammation in vessel walls and around vessels. This inflammation may be difficult to distinguish from perivascular mononuclear infiltrates that are seen in MS and infectious diseases. Note absence of blood vessels corresponding to the lesion. Other causes of arterial occlusion and infarction include: Hematologic disorders - Polycythemia, hemoglobinopathies sickle cell disease , deficiencies of anticoagulant factors, thrombotic thrombocytopenic purpura. Metabolic disorders - Dyslipoproteinemias, Fabry disease, homocystinuria, organic acidemias, mitochondrial disorders. Some of these conditions cause ischemic infarcts even in children and infants. Mitochondrial disorders can cause TIAs and ischemic strokes. These polymorphisms derange the delicate balance between natural anticoagulant and procoagulant pathways. They are very prevalent in the population and combine with one another and with aquired conditions that promote clotting, causing venous and arterial infarcts. Dissecting aneurysm Dissecting aneurysm dissecting hematoma. Blood has dissected between the internal elastica and media, collapsing the lumen. This was a spontaneous lesion in a young man. Trauma to the head and neck can cause dissecting aneurysms and other lesions of the carotid and vertebral arteries. The pattern of brain necrosis in severe traumatic brain injury often suggests vascular occlusion. In some cases, arterial dissection occurs apparently spontaneously, without a traumatic event. Contraceptives and estrogen therapy cause most commonly venous thrombosis and rarely intimal hyperplasia and thrombosis of cerebral and extracerebral arteries. This is a complication of subarachnoid hemorrhage. Cerebral autosomal dominant arteriopathy with subcortical infarcts and ischemic leukoencephalopathy CADASIL , caused by mutations of the NOTCH3 gene, is a small vessel arteriopathy in which deposition of a granular osmiophilic material in the vessel wall causes loss of smooth muscle, thickening of the wall, and narrowing of of the lumen. The symptoms are due to involvement of the brain but the pathology affects other organs and tissues and can be diagnosed with a skin biopsy. An autosomal dominant angiopathy due to mutations of COL4A1, which encodes a collagen of the vascular adventitia, causes porencephaly in infants and a spectrum of disease in adults which includes small vessel disease, lacunar infarcts, microhemorrhages, deep intracerebral hemorrhages, intracranial aneurysms, and leukoencephalopathy. Other COL4A1 related disorders are renal and liver cysts, and eye abnormalities. Cerebral amyloid angiopathy , caused by deposition of various types of amyloid, causes similar vascular pathology but affects primarily leptomeningeal and cortical vessels. Spontaneous dissecting aneurysms,moya-moya disease narrowing of proximal cerebral arteries. The fat embolism syndrome FES is a complication of long bone fractures, orthopedic surgery, and traumatic lesions of the viscera and subcutaneous tissue, including burns. The most common non-traumatic cause of the FES in children and young individuals is sickle cell disease. Other non-traumatic settings of FES include, osteomyelitis, pancreatitis, and diabetes. Clinically, FES is characterized by petechial rash, hypoxemia, deterioration of mental status, and thrombocytopenia. Pathologically, there are petechial hemorrhages and micro-infarcts in the brain, heart, and other organs. Fat embolism syndrome Fat embolism syndrome. Microhemorrhages around occluded capillaries. Oil Red O stain showing lipid globules in capillaries. Fat, mobilized during trauma or osteonecrosis, enters the venous circulation and embolizes pulmonary artery branches and capillaries. If the capacity of pulmonary capillaries is exceeded or the lungs are by-passed through a patent foramen ovale, fat globules enter the arterial circulation and occlude capillaries in the heart, brain, kidneys, and other organs, causing hemorrhagic and ischemic lesions. There is some debate about the

pathogenesis of the FES. Some attribute it to mechanical obstruction by fat globules. Other views maintain that it is caused by agglutination of chylomicrons and toxic action of free fatty acids and other fat breakdown products. The young man had headaches and was thought to have pseudotumor cerebri. He was heterozygote for the Prothrombin A mutation. Thrombosis of venous sinuses and their tributaries causes congestion, hemorrhage, and necrosis of brain tissue venous infarction. Venous infarcts from thrombosis of the superior sagittal sinus are parasagittal. The causes of venous thrombosis are diverse and include oral contraceptives, inherited thrombophilias, cancer and, in infants, dehydration. Sinovenous thrombosis accounts for some cases of the syndrome of pseudotumor cerebri, which is characterized by headache, papilledema, increased CSF pressure and normal size ventricles. These symptoms and signs are caused by intracranial hypertension which is due to impaired resorption of CSF into the venous sinuses and venous congestion. Examination, in these cases reveals a combination of small or large infarcts, hippocampal sclerosis, leukoencephalopathy due to cerebral amyloid angiopathy or other small vessel disease, and other lesions. These lesions affect cumulatively large areas of the cortex, especially regions involved in memory and higher functions.

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