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RESEARCH ARTICLE

ANASARCA.

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Abstract

Anasarca is a severe and generalized form of edema with widespread subcutaneous tissue swelling. It is different from slight swelling or oedema that occurs mainly in the feet. Accumulation of fluid may occur due to illness like heart failure, kidney failure, hepatic failure and nephrotic syndrome that change the proteins of the body, affect the balance of fluids, or create abnormalities in the blood vessels or lymphatic system. A selection of diagnostic methods can be used in a challenge to make a diagnosis of anasarca. Formerly anasarca and the underlying problem is diagnosed, suitable measures will be made to treat the problem.

Introduction:-

Case history:
Mr. Suresh Babu 36 years who admitted in a government hospital with generalised edema and volume overload state. He is a known case of chronic alcoholic with withdrawal symptoms. On the day of admission, he was hemodynamically stable, hydration fair, bilateral pitting edema and facial puffiness present. On examination liver palpable 2cm, spleen palpable 6cm and scrotal swelling was found. Investigations reveals bilateral pleural effusion present USG chest, Doppler study indicates grade-I fatty liver, volume overload status and enlarged paraumbilical collaterals. He was treated by loop diuretics, inj. Thiamine 100 mg and fluid restrictions below 1.5L/day.

Brief view:
Anasarca is a severe and generalized form of edema with widespread subcutaneous tissue swelling. It is usually caused by liver failure (cirrhosis of the liver), renal failure, right-sided heart failure, as well as severe malnutrition/protein deficiency. The increase in salt and water retention caused by low cardiac output can also result in anasarca as a long-term maladaptive response. It can also be created from the administration of exogenous intravenous fluid. Certain plant-derived anticancer chemotherapeutic agents, such as docetaxel, cause anasarca through a poorly understood capillary leak syndrome. In Hb Barts, the high oxygen affinity results in poor oxygen delivery to peripheral tissues, resulting in anasarca.

Introduction
Edema is localised or generalised. if localised, the local phenomena that may be responsible should be considered. If edema is generalised, one should first determine if there is serious e.g., serum albumin <25g/L. if so, the history, physical examination, urinalysis, and other laboratory data will help evaluate the question of cirrhosis, severe

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malnutrition, or the nephrotic syndrome as the underlying disorder. If hypoalbuminumia, is not present, one should determine if there is evidence of congestive heart failure severe enough to promote generalised edema. Finally, one should determine whether the patient has an adequate urine output or if there is significant oliguria or anuria.

Definition

Anasarca is general swelling of the whole body that can occur when the tissues of the body retain much fluid. The condition is also known as extreme generalized oedema.

Terminology

1. Localised edema: It is due to venous or lymphatic obstruction.
2. Edema of heart failure: The edema of heart failure typically occurs in the dependent portions of the body.
3. Edema of the nephrotic syndrome: This syndrome may occur during the course of a variety of kidney diseases.
4. Edema of cirrhosis: A sizable accumulation of ascitic fluid may increase intra-abdominal pressure and impede venous return from the lower extremities.
5. Edema of nutritional origin: deficient protein over a period may produce hypoproteinuria and edema

Etiology

Conditions Associated with Anasarca

1. Edema of Heart Failure
2. Acute Renal Failure
3. Hepatic Failure
4. Edema of Nephrotic Syndrome
5. Obstruction of venous (and lymphatic) drainage of a limb
6. Edema of cirrhosis
7. Edema of nutritional origin

Increased body sodium and water retention driven by:

1. Increased ADH elaboration
2. Increased renin-angiotensin-aldosterone system activity
3. Anuria coupled with fluid administration
4. Hypoalbuminemia
5. Portal hypertension
6. Iatrogenic Overhydration
7. Excessive fluid volume administered
8. Fluid administration based on whole body weight in morbid obesity leads to overhydration
9. Failure of sodium restriction
10. If coupled with crystalloid fluid administration at normal maintenance rate

Increased vascular permeability: multiple causes

1. Immune-mediated (e.g., systemic lupus erythematosus)
2. Infectious diseases (e.g., rickettsial infections)
3. Hypersensitivity reactions
4. ADH, Antidiuretic hormone.

Other causes:

1. Hypothyroidism, hyperthyroidism
2. Deposition of hyaluronic acid in Graves' disease
3. Lymphatic infiltration and inflammation
4. Exogenous hyperadrenocortism
5. Pregnancy
6. Drugs: like anabolic steroids and steroids like prednisolone, estrogens and vasodilators: e.g. dihydropyridines such as nifedipine

Pathophysiology

Anasarca is the steady progression of the swelling; the pathophysiology of anasarca is the similar as that of oedema. Edema results, increased movement of fluid from the intravascular to the interstitial space or decreased movement of

water from the interstitial into the capillaries or lymphatic vessels. The mechanism involves one or more of the following:

1. Increased capillary hydrostatic pressure
2. Decreased plasma oncotic pressure
3. Increased capillary permeability
4. Obstruction of the lymphatic system

Increased capillary hydrostatic pressure:
A fluid shifts into the interstitial space, intravascular volume is depleted. Intravascular volume depletion activates the renin-angiotensin-aldosterone- vasopressin (ADH) system, resulting in renal sodium retention. By increasing osmolality, renal sodium retention triggers water retention by the kidneys and helps maintain plasma volume. Increased renal sodium retention is primary cause of fluid overload and edema.

Decreased plasma oncotic pressure
Edema results, decreased movement of fluid out of the interstitial space into the capillaries due to lack of adequate plasma oncotic pressure as in nephrotic syndrome, protein-losing enteropathy, liver failure, or starvation.

Increased capillary permeability
Increased capillary permeability occurs in infections or as the result of toxin or inflammatory damage to the capillary walls.

Obstruction of the lymphatic system
The lymphatic system is responsible for removing protein and WBCs (along with some water) from the interstitium. Lymphatic obstruction allows these substances to accumulate in the interstitium.

Diagnosis:
Complete hemogram

1. Hb – reduced in chronic renal disease
2. RBCs may show macrocytosis or target cells in chronic liver disease

Urea/ Creatinine
It rises in Renal disorder and left Heart failure

Chest X Ray/CT Scan

1. Show evidence of pulmonary edema
2. Show evidence of Pleural and Pericardial effusion
3. Show cardiac hypertrophy in chronic heart diseases

ECG in 12 leads

1. Shows patterns of Ventricular hypertrophy
2. Gives evidence of electrolyte imbalance (in renal failure)

Echocardiography

1. Confirms heart failure
2. Detects ventricular hypertrophy
3. Detects pericardial effusion

Serum albumin

1. Reduced in hepatic disease and nephrotic syndrome
2. Unchanged in heart failure

Liver function tests:
Abnormal in cirrhosis (raised AST, ALT, reduced albumin, altered albumin:globulin ratio)

Prothrombin time:

1. Raised in cirrhosis

2. Reduced in nephrotic syndrome
3. Unchanged in cardiac failure

Urine Routine Examination
In nephrotic syndrome, following changes are expected:
1. Physical – appearance is hazy, high specific gravity
2. Chemical – protein +++
3. Microscopic – fatty cast +, hyaline cast +++

24-hour urinary protein level:
Raised in nephrotic syndrome (often > 3.5 g/day)

Examination of pleural fluid in case of pleural effusion:
State the differences between transudate and exudate

Differential diagnosis of anasarca:
1. Heart failure due to thiamine deficiency
2. Heart failure due to cardiac cirrhosis
3. Nephrotic syndrome
4. Alcoholic liver cirrhosis
5. Malnutrition
6. Kwashiorkor like syndrome in severe trauma and burns
7. Eclampsia in pregnancy
8. Hypoalbuminemia/ hypoproteinaemia
9. Hypothyroidism
10. Protein losing enteropathy

Treatment
Diuretics:
Diuretics work by helping the kidneys release more salt into the urine, which causes the release of more fluid through urination. The two main types of diuretics prescribed for anasarca include potassium-sparing and loop diuretics. The dose, and the route of administration vary according to the severity of the swelling and the underlying cause of anasarca.

Albumin:
Albumin is a protein made by the body that is necessary for a variety of important functions, including balancing fluid. In cases of poor nutrition and certain serious medical conditions, the level of albumin can become too low. When this occurs fluid from the bloodstream is pushed out into the tissues causing swelling. In some cases, replacing albumin can help correct this problem.

Home treatment:
1. Keep moving: Exercise can help pump excess fluid back to your heart. But if you have heart problems, be sure to talk to your doctor before starting an exercise regimen.
2. Massage: Gently massaging your flesh in the direction of your heart may help reduce swelling.
3. Reduce salt intake: Decreasing the amount of salt you eat can sometimes reduce swelling associated with anasarca.
4. Monitoring fluid intake

Complications
Complications of anasarca include, skin ulcerations, skin infections, dyspnea, congestive heart failure, and death.

Conclusion:-
Anasarca is very familiar in patients with heart failure and kidney failure. Anasarca happens because there is an underlying problem. It is very significant to address the disease or conditions of the patient because further ignore can lead to death.

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