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Prospective study on risk factor for unilateral oedema of leg

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Abstract

Background and Objectives: Unilateral oedema leg is always due to local causes like DVT, TRAUMA, OESTEOARTRITIS, VENOUS THROMBOSIS, LYMPHATIC OBSTRUCTION, TRAUMA etc. This study conducted to assess the most salient risk factor for unilateral oedema of leg among general population.

Methods: All patients attending the surgical Out Patient Department with unilateral oedema of leg admitted and evaluated to assess the risk factor for unilateral oedema of leg and treated accordingly and sample size of this study is 84 cases who presented with unilateral oedema of leg.

Result: Among 84 cases presented with unilateral oedema of leg .54 cases (65%) are females, 30 cases are males. 47cases (57%) were presented with unilateral oedema of right leg.37 cases (43%) were presented with unilateral oedema of left leg. 62 cases (74%) cases were diagnosed to have diabetes mellitus along with unilateral oedema of leg. 13(16%) cases diagnosed to have DVT confirmed using Moses and homan's sign clinically, D-dimer test and Doppler study.

Five (6%) cases diagnosed with osteoarthritis of knee joint confirmed by x-ray knee joint. two (2%) cases diagnosed with trauma. two cases (2%) diagnosed with lymphatic obstruction caused by filariasis.

Conclusions: The findings of this study showed that unilateral oedema is more common among females than males. Diabetes mellitus is the most common risk factor for unilateral oedema of leg

Keywords: eTEP, ventral abdominal hernia repair, inguinal hernias, umbilical hernia

Introduction

Unilateral oedema of leg is defined palpable swelling, which occurs due to accumulation of fluid in the interstitial space in the lower extremity. Unilateral oedema of leg occurs usually to local cause and systemic disease cause bilateral oedema of leg.

Pathophysiology

Oedema occurs due to fluid shift to the capillary membrane as result of an imbalance between hydrostatic and oncotic pressure, according to the Starling equation: $Q = k(P_{cap} - P_{int}) - \sigma(p_{cap} - p_{int})$, Oedema can be secondary to altered fluid balance, increased pulmonary capillary hydrostatic pressure and decreased capillary oncotic pressure, Role of hydro-saline retention mechanisms, increased capillary permeability.

Altered fluid balance occurs due to filtration gradient increase more than 15 mmHg, as observed in most clinical and laboratory settings.

- Increased pulmonary capillary hydrostatic pressure: this condition could be determined by a circulatory fluid overload (heart and/or renal failure), partial or complete venous obstruction (deep vein thrombosis, liver cirrhosis).
- Decreased capillary oncotic pressure occurs in all cases of hypoproteinaemia and/or dysproteinaemia, such as urinary protein loss and impaired protein synthesis in chronic liver diseases.
- Role of hydro-saline retention mechanisms occurs as a result of Renin – angiotensin-aldosterone mechanism , ADH , Activation of sympathetic nervous system occurs as compensatory mechanism occurs physiologically due to volume depletion and pathological due to primary organ dysfunction such as Cardiac Failure , Liver failure and Renal failure.
- Increased capillary permeability occurs the case of skin burns, endothelial vascular

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- growth factors abnormalities as in adult respiratory distress syndrome and severe malnutrition, therapy with interleuchin-2 recombinant protein circulating cytokines.

Etiology

Unilateral oedema of leg occurs due to venous obstructive diseases like Diabetes mellitus DVT, Superficial thrombophlebitis, Lymphatic obstruction occurs due to filariasis, Trauma, osteoarthritis, Rupture of popliteal cyst, infections.

Venous insufficiency edema

DVT (Deep vein Thrombosis) is one of the most common cause of unilateral oedema of leg. Risk factors for DVT are old age, malignancy, prolonged bed ridden, recent surgery, and previous history of DVT. Diagnosed of DVT is by patient history, clinical and laboratory findings. Clinically Moses sign and homan's sign will be positive .D dimer is the blood investigation to predict the diagnosis of DVT but it is not a confirmatory test. Venous Doppler study is the investigation of choice to confirm DVT, Treatment initially given for DVT are anticoagulation therapy after hospitalization because of Risk of heparin-induced thrombocytopenia, High risk of bleeding.

Chronic venous insufficiency

Oedema occurs in chronic venous insufficiency due to venous stasis .Clinical symptoms like heaviness in the affected limb, skin changes from pigmentation to ulceration.

In 1994, it was established the CEAP system in order to stage the disease in relation to clinical presentations (C), aetiology (E), anatomic distribution (A) and physiopathology (P).

Doppler ultrasound is the investigation of choice to check anatomy of reflux, origin, incompetent valves, and thrombophlebitis in order to plan for surgery. If planned for surgery. Various surgical technique for varicose vein innovated from Trendelenburg procedure with/without stripping, sub fascial perforator ligation to Endovenous laser ablation, and Endovenous fibrin glue technique.

Lymphatic obstruction

- Lymphatic obstruction in the lower extremity occurs due to filariasis, iatrogenic injury to the lymphatics due to surgery, infections. Patient clinically presented with brawny fibrotic skin, Kaposi stremmer sign positive indicate lymphatic obstruction. Treatment for lymphatic obstruction depends upon severity. Initial conservative treatment by treating filariasis using Anthelmintic drugs, compressive stockings and pneumatic compression devices. Surgical treatment varies for reductive procedure to bypass procedures. Reductive procedures are Charles technique, Homan's technique, Thompson's technique. Bypass procedures are Lymphatico lymphatic anastomosis , Lymphatico-venous anastomosis, Mesenteric bridge operation(kinmonth's procedure)

Trauma

Lymphedema of leg occurs due to trauma like Road traffic accidents, burns or secondary to surgery due to extensive lymph node dissection.

Ruptured baker's cyst causes localised inflammation leads to accumulation interstitial fluid leads to unilateral oedema of leg. Osteoarthritis of knee joint also cause unilateral oedema of leg

Infections

The condition varies from very too severe fatal soft tissue infections. Various soft tissue infections of lower limbs are impetigo, pyogenic abscess, and Erysipelas, cellulitis and necrotising fasciitis.

Impetigo & pyogenic abscess are usually erythematous, fluctuant swelling with pustule on top. Treatment of pyogenic abscess is incision & drainage followed by administration of antibiotics to subside the infection.

Erysipelas is the infection of upper dermis and lymphatics caused by beta haemolytic streptococci. Clinically presents with erythematous lesion with typical raised edge.

Cellulitis

This is the infection of lower dermis, subcutaneous tissue causing warmth, peau d orange appearance to affected skin with skin erythema mostly caused by Beta haemolytic streptococci, s. aureus. Treatment for Erysipelas and cellulitis is administration of broad-spectrum antibiotics.

Necrotizing Fasciitis

It is an infection involving muscle, fascial compartments secondary to skin infection and trauma. Clinical features are intense pain with fever, bullous lesion, skin necrosis, gangrene. Treatment for necrotizing fasciitis are surgical debridement with fasciotomy along administration of broad-spectrum antibiotics.

This study conducted to assess the most salient risk factor for unilateral oedema of leg is diabetes mellitus because complications of diabetes mellitus are diabetic neuropathy, vasculopathy and it causes agranulocytosis results in immunodeficiency.

With increased incidence of metabolic disease like Diabetes mellitus , most of the cases whoever admitted in surgical wards shows sepsis , oedema , cellulitis throughout the lower extremity, arthritis , ulcerations , osteomyelitis leading to acute or chronic unilateral oedema of leg and Diabetes mellitus is the exposure/Risk factor /aetiopathogenesis with Hyperglycaemia and Bacterial infection. This study conducted to conclude diabetes mellitus is the most common cause for unilateral oedema of leg.

Aim and Objective

To study the most common risk factor for unilateral oedema of leg.

Inclusion criteria

All patients presented to surgery opd with unilateral oedema of leg.

Exclusion criteria

All Patients presented with bilateral oedema of leg. Patients with decompensated diseases such as chronic kidney disease, chronic liver disease, Respiratory diseases such as copd, Type I & type II Respiratory failure.

Methods

This study principally a prospective observational study includes 84 cases presented with unilateral oedema of leg to surgery OPD.in Karpaga Vinayaga Institute of Medical Sciences from DECEMBER 2018 to DECEMBER 2019. Ethical committee approval obtained and all patients are including in this study after obtaining informed consent.

Statistical Analysis

Among 84 cases presented with unilateral oedema of leg .54 cases (65%) are females, 30 cases are males. 47cases (57%) were presented with unilateral oedema of right leg.37 cases (43%) were presented with unilateral oedema of left leg. A total of 62 cases (74%) cases were diagnosed to have diabetes mellitus along with unilateral oedema of leg 13(16%) cases diagnosed to have DVT confirmed using Moses and homan's sign clinically, D-dimer test and Doppler study.

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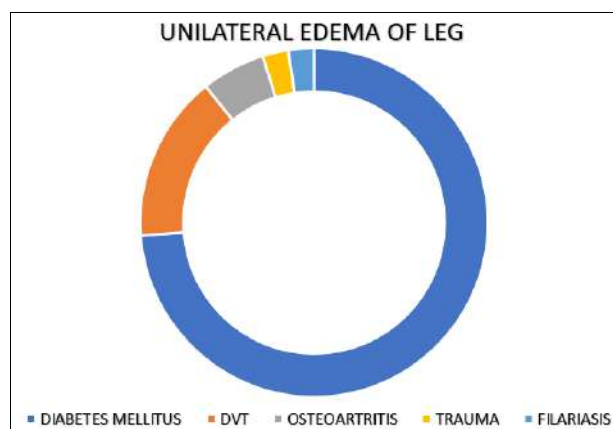


Fig 1: Risk factors

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