Peripheral Vascular Disease (PVD)
Deep Vein Thrombosis (DVT) & Atrial Fibrillation

Presented by UIC College of Nursing
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Objectives
- Identify differences between arterial and venous Peripheral Vascular Disease (PVD)
- Identify characteristics one would use to describe a wound/ulcer
- Identify the major risks of a Deep Vein Thrombosis (DVT)
- Identify two signs of bleeding post medical treatment for DVT
- Identify risk factors for Atrial Fibrillation
- Name two complications of Atrial Fibrillation
- Name two management factors for medication, exercise and nutrition for Atrial Fibrillation

Arteries
Thick-walled vessels that transport oxygen and blood from the heart to the tissues of the body

There are 3 layers to the arteries
- Inner layer of endothelium (intima)
- Middle layer of connective tissue, smooth muscle and elastic fibers (media)
- Outer layer of connective tissue (adventitia)
Veins

Thick-walled vessels that transport deoxygenated blood from the capillaries back to the heart.

There are 3 layers – intima, media, and adventitia:
- Little muscle or connective tissue thus distensible
- Major veins have one-way valves
- Valves help blood be pumped back to heart

Topic Identification

Peripheral Vascular Disease
Deep Vein Thrombosis
Atrial Fibrillation

Peripheral Vascular Disease (PVD)
What is Peripheral Vascular Disease?
- The reduction in blood flow to the extremities
- This causes ischemia and necrosis in the tissue
- Most common disease of the vessels
- Caused by fatty deposits in the arteries/veins

Contributing Factors
- Atherosclerotic Changes
- Thrombus Formation
- Embolization
- Increase Coagulability of the Blood
- Hypertension
- Inflammatory Process or Infection

Arterial Insufficiency Signs and Symptoms
- Pulses are diminished or absent
- Individual experiences sharp stabbing pain
- Show changes in color (pale, bluish or dark reddish) to the skin and eventually ulceration
Venous Insufficiency
Signs and Symptoms

- Stasis of blood in the tissues
- Pulses are present
- Edema
- Skin changes
- Stasis ulcers

Characteristics of PVD

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Arterial Disease</th>
<th>Venous Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Cool, flabby, dry, shiny, pallor on elevation, redness on dumping</td>
<td>Warm, thickened, hardened, pigmented areas</td>
</tr>
<tr>
<td>Pain</td>
<td>Sharp, stabbing, worsens with activity and walking, lasting days</td>
<td>Aching, cramping, activity and walking symptom, eases with rest</td>
</tr>
<tr>
<td>Ulcers</td>
<td>Evanescent, pale, gray base, found on heel, toe, dorsum of foot</td>
<td>Moderately painful, pink base, found in medial aspect of the ankle</td>
</tr>
<tr>
<td>Pulses</td>
<td>absent or diminished</td>
<td>Usually present</td>
</tr>
<tr>
<td>Edema</td>
<td>In frequent</td>
<td>Frequent, ups of the end of the day and in areas of ulceration</td>
</tr>
</tbody>
</table>

Characteristics of Insufficiency
Ulcer Locations

Clinical Assessment

Clinical assessment of leg ulcers

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>VENOUS</th>
<th>ARTERIAL</th>
<th>NEUROPATHIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated findings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hamorrhagic bleeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry skin, keratosis</td>
<td></td>
<td></td>
<td>Callos formation</td>
</tr>
<tr>
<td>Vesicle, blisters</td>
<td></td>
<td></td>
<td>Loss of sensation</td>
</tr>
<tr>
<td>Pedal pulses present</td>
<td></td>
<td></td>
<td>Vibration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Warts foot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thin, shiny, dry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduced or no hair</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>on lower leg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pus from leg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>erosion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Absent or weak</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>pedal pulses</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Destroyed capillary</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vessel</td>
<td></td>
</tr>
</tbody>
</table>

Staging of Ulcers

STAGE I
- Reduced pulses

STAGE II
- Pain even when walking

STAGE III
- Intermittent claudication

STAGE IV
- Ulcers
### Characteristics to describe a wound
- Size - measure the wound in two directions
- Measure the depth of the wound
- Know the color of the wound - beefy red, white, scabbed over, are there any yellow, green or grey areas
- Wound edges - irregular, smooth
- Do you notice any discharge - is the dressing wet
- Do you notice an odor

### Treatment
- Smoking Cessation
- Medication for
  - Blood pressure
  - Cholesterol
  - Blood sugar
  - Anticoagulants
- Procedures
  - Angioplasty
  - Bypass surgery
  - Thrombolytic therapy
  - Exercise

### Management
- Promote healthy diet
- Avoid Trauma - mechanical, chemical, or thermal
- Relieve pain - elevate the head of the bed; more blood flow to the feet
- Do not wear tight clothing
  - Adequate clothing during the winter
  - Daily foot care, examination
- Avoid being out in the cold-cold temperatures
- Provide emotional support
Deep Vein Thrombosis (DVT)

What is Deep Vein Thrombosis?
- Blood clot that occurs in the vein
- Usually occurs at bifurcations, turbulent blood flow
- Major risk is dislodgement

DVT Clinic Signs
- Pain in an extremity
- Edema in the extremity
- Increase circumference of thigh or calf
- Positive: Homan sign-dorsiflexion—calf pain
- Area that is red is warm to the touch
Management

Requires Hospitalization
- Rest with legs elevated 15-20 degrees
- Application of warm moist heat—reduce pain
- Elastic Stocking/bandages
- Anticoagulants-IV heparin then Coumadin
- Fibrinolytic
- Vasodilators

DVT Management

Medical
Anticoagulants
- Heparin—antidote Protamine sulfate
- Warfarin—Vitamin K

Fibrinolytics or thrombolytics- dissolve the clot
- Streptokinase or Urokinase

Surgical- removal of the clot- usually when large arteries are obstructed. 6-10 hours to prevent tissue breakdown

DVT Management

Post Medical Management
- Change of color or temperature of the extremity
- Keep extremity warm, but do not apply heating pads
- Look for signs of bleeding- nose or gum bleeding, pin point red areas on the skin (Petechiae), bruising, hematoma
**DVT Management**

**Post Medical Management**

**Monitor**
- Urine: blood in urine - red, slightly red, brown in color
- Stool: dark in color or red in color
- Emesis: coughing up with streaks of blood
- Gastric blood: bright blood and dark blood

**Other areas to monitor**
- Avoid injections
- Use soft toothbrush
- Use electric razor

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**DVT Management**

**Preventative**
- Avoid long periods of standing or sitting
- Elevate legs when sitting, dorsiflex feet
- If edema noted: elevate extremity above level of heart
- Regular exercise: promotes circulation
- Avoid crossing legs at knees
- Avoid wearing constrictive clothing: socks, garters
- Use elastic stocking on affected leg
- Use leg exercises during periods of immobility

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**Atrial Fibrillation**
**What is Atrial Fibrillation?**

- A heart rate (ventricle) of 100-160 beats per min
- Incidence or prevalence increase with age
- Irregular pulse

**Major Risk Factors**

- Pulmonary Disease
- Rheumatic Valve Disease
- Anemia
- Alcohol (holiday heart)
- Thyroid disease
- Sleep Apnea
- Elevated Blood Pressure (HTN)
- Sepsis

**Common Chronic Conditions**

- Hypertension
- Ischemic heart disease
- Hyperlipidemia
- HF
- Hyperthyroidism
- Anemia
- Diabetes Mellitus
- CKD
- Arthritis
- Depression
- COPD
Clinical Features

- Palpitations
- Fatigue
- Syncope
- Dyspnea
- Syncope

Complications

- Stroke
- Heart Failure

How blood clot forms to possibly cause a stroke

Stroke with A Fib

- Top chambers of the heart begin to quiver
- Blood clot forms in atria
- Can cause a stroke
Condition Management
Ablation

Condition Management
Medications

Novel oral anticoagulants
- Dabigatran
  - Oral direct thrombin inhibitor
  - Twice daily dosing
  - Renal clearance
- Rivaroxaban
  - Direct factor Xa inhibitor
  - Oral, once daily (maintenance), twice daily (loading)
  - Renal clearance
- Apixaban
  - Direct factor Xa inhibitor
  - Twice daily dosing
  - Hepatic clearance
- Edoxaban
  - Direct factor Xa inhibitor
  - Once daily dosing
  - Hepatic clearance

Management Factors

Care Plan
Prevention Strategies

- Regular Physical Activity: walking, starting at 10 min and increase by 5 min per week.
- Eat a heart healthy diet: low salt, saturated fats, trans fats and cholesterol
- Manage high blood pressure: less than 120/80
- Avoid excessive alcohol and caffeine
- Do not smoke
- Control cholesterol
- Maintain a healthy weight

Nutrition

- Roast: so meat does not sit in its own fat, season with salt-free, lemon juice
- Bake: cover cook slowly with gentle heat; helps keep in the moisture
- Braise or Stew: cook and refrigerate the food and remove any fat that becomes solid
- Poach: in simmering water; fish, chicken, or eggs
- Grill or Broil: on a rack over high heat
- Saute: in skillet or frying pan, use nonstick vegetable spray
- Stir-fry: in wok over high heat small amount of vegetable oil
- Microwave
- Steam: wire basket over water; vegetables, fish

How to Change Eating Habits

- Eat slowly: take smaller portions and avoid "seconds"
- Eat a few light meals each day instead of one main meal
- Do not skip meals
- Choose a variety of healthy foods: fruits, vegetables, whole grains, dried pea and beans, low-fat dairy, fish, skinless poultry, lean meat and nuts
How to Change Eating Habits

- Cook foods in healthier ways like baking, boiling, broiling, grilling, roasting, or stewing
- Do NOT fry foods in oil
- Read food labels and avoid foods that are high in added sugars, saturated and trans fats, sodium and calories
- Avoid pastries, sugar-sweetened beverages, candy bars, pies, and cakes

Physical Activity

- Walking
- Swimming
- Dancing
- Moderate weight lifting and bending
- 150 minutes a week=20 min a day
- Cleaning- washing windows, vacuuming, mopping
- Bicycling

Self Management
Common Barriers

- Education level
- Income
- Access to providers
- Motivation
- Health literacy
- Functional status
- Social support
- Co-morbid Conditions
- Others?

Self Management

- What tasks does the member need to do?
- What is their current knowledge?
- How do they learn?
- Who can be involved?

Lifestyle Choices and Habits

- Sleep
- Exercise
- Goals
Knowledge, Abilities, Barriers & Resources

- Lack of Knowledge - educate, educate, educate
- Lack of abilities - find alternatives
  - Physical activity - Wii, use bags of flour or sugar as weights
  - Can start by doing the exercises in a chair
  - Providers can write scripts for exercise up to 60 minutes a day three times a week
- Food deserts for vegetables - see about going to a farmer's market, might need home maker services
- Can a family member shop for the member?
- Making sure the member has a blood pressure cuff
- May need a calorie log, blood pressure log, activity log

Conclusion

Discussion/Questions
References


