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Phlegmasia Cerulea Dolens in Developing Countries : Challenges and Context

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Phlegmasia Cerulea Dolens (PCD) is an uncommon life-threatening, vascular emergency condition, which results from acute and massive venous thromboembolism.1 The name PCD comes from Latin language which means "painful blue inflammation," and reflect the dark discoloration of leg and extreme pain.[1] It is a severe and life-threatening complication of deep vein thrombosis (DVT), that leads to limb ischemia, swelling and pulmonary embolism, poses significant challenges in developing countries due to systemic health care parities which emanate from limited and unequal access to quality health care services.[2] PCD is characterized by extensive clot formation or thrombosis in the major deep veins of the lower extremity and is associated with high morbidity and mortality.[1] Around 40% of the PCD cases can be associated with malignancies (i.e. limb or venous gangrene) and highest incidence of patients may occur in 5th and sixth decades of life with predominantly in males than females.[3,4] PCD often leads to serious post-thrombotic complications and carries a high risk of recurrence if not treated adequately. Further, if symptoms persists and venous gangrene develops, the chances of amputation will be 20%-50%, with a higher rate of mortality at 20%-40%.[5,6]

In developing countries, PCD is often under-reported due to the lack of awareness among healthcare providers and limited diagnostic resources (e.g., Doppler ultrasound, CT angiography).[7] The risk factors are prolonged immobility (long hospital stays, post-surgery), pregnancy and postpartum (high risk due to hormonal changes and vascular compression), infectious diseases (e.g., tuberculosis, HIV), genetic predispositions (i.e., Protein C or S deficiency, Factor V Leiden mutation), sedentary lifestyle, obesity and cancer associated thrombosis.[1,8,9] Other barriers to diagnosis and treatment can be delayed presentation of the patient due to the limited access to healthcare facilities especially in rural areas, poor public awareness of DVT/PCD symptoms, lack of imaging tools, financial constrains i.e., unaffordability of cost of imaging and anticoagulation therapy.[10] While cultural reliance on traditional medicine or spiritual healers for limb pain/swelling, such as in some cultures, limb discoloration/swelling may be attributed to bad blood or evil spirits, delay in providing biomedical healthcare.[11]

Despite these challenges, PCD is a treatable condition, and complications can be minimized if timely interventions are made. Definitive management involves anticoagulation (low-molecular weight heparin), catheter-directed thrombolysis, thrombectomy or combination of these interventions depending on the severity of presenting symptoms.[1] Additionally, the supportive measures which should be the first line of management such as elevating the limb to reduce edema and compression on arterial system, preventing circulatory collapse and hypovolemic shock.[1] Further, compression therapy and lifestyle modifications by using graduated compression stockings can help to prevent post-thrombotic syndrome and encouraging mobility to reduce venous stasis.[1,6]

In developing countries to prevent PCD and its complications, it requires targeted multifaceted approaches to ensure accessibility and feasibility. To provided awareness and education, public health campaigns are required to educate communities about risk factors for venous thromboembolism (i.e., immobility, dehydration, prolonged sitting), emphasize the importance of seeking medical healthcare early for leg swelling, pain, or discoloration. Healthcare professionals' trainings to provide continuous medical education on recognizing and managing acute DVT and its severe form PCD. Government should ensure the availability of portable doppler ultrasound at primary or secondary healthcare facilities for initial DVT screening. Basic laboratory tests (D-dimer) where feasible, recognizing limitations in some rural settings. Develop clear referral pathways for suspected severe DVT or PCD to higher-level hospitals equipped with vascular expertise and strengthen transportation networks to minimize delays in seeking healthcare. Local governments and hospitals should work with pharmaceutical companies to subsidize low-molecular-weight heparin and direct oral anticoagulants, encourage local production or bulk purchasing where possible to reduce cost barriers.[9] Prophylactic interventions standardized venous thromboprophylaxis guidelines in hospitals, especially for high-risk patients (i.e., surgical, immobile, obstetric). Establish follow-up programs for patients at high risk (cancer patients, those with prior DVT) to ensure continued or extended anticoagulation when necessary. Addressing underlying risk factors in cancer patients, strengthen oncology services for early detection and treatment of malignancies, a major cause of hypercoagulability. Lifestyle modifications, especially encourage regular physical activity, smoking cessation programs and weight management initiatives. Maternal health programs should incorporate DVT risk screening and prophylaxis in prenatal care, especially for high-risk pregnancies, train midwives and obstetricians to recognize signs of acute DVT/PCD. To ensure guidelines are contextualized for resource-limited settings, hospitals protocols should mandate VTE prophylaxis protocols in surgical wards, intensive care units, and obstetric units. Encourage government or private insurance schemes to cover anticoagulants, diagnostic imaging, and vascular interventions. Identify regional centers with vascular surgeons/interventional radiologists capable of performing thrombolysis, thrombectomy, or stenting if needed.[12]

In conclusion preventing PCD in developing countries requires a mix of community empowerment, healthcare worker training, equitable access to anticoagulants, and systemic policy reform. Prioritizing cost-effective, scalable solutions can save limbs and lives while reducing the burden on overwhelmed health systems.

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