CME CREDIT

TAKE-HOME POINTS FROM LECTURES BY CLEVELAND CLINIC AND VISITING FACULTY

How to use low-molecular weight heparin for outpatient management of deep vein thrombosis

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ABSTRACT

Low-molecular weight heparins can be used to treat acute deep vein thrombosis on an outpatient basis, but such use requires careful planning and patient education. We present an algorithm used at the Cleveland Clinic.

BECAUSE LOW-MOLECULAR WEIGHT heparins can be given as once-daily or twice-daily subcutaneous injections without the need for routine therapeutic monitoring, they can simplify the acute treatment of deep vein thrombosis (DVT) and shorten or eliminate hospitalizations needed to start anticoagulation treatment. Home therapy of acute DVT should, in turn, result in increased patient satisfaction and considerable cost savings for the health care system.

However, one cannot simply write a prescription for a low-molecular weight heparin and send the patient home. Careful patient selection, education, and clinical monitoring are required. Here is the algorithm we use at the Cleveland Clinic (FIGURE 1).

Diagnosis

The diagnosis of DVT must be confirmed by an objective diagnostic test, ie, by duplex ultrasonography or contrast venography.

Initial anticoagulant treatment

Treatment should begin once the diagnosis of DVT has been confirmed, or even before test results are available if the patient exhibits signs and symptoms that support a high pretest probability of DVT.

Approved options for initial therapy are:

- Enoxaparin sodium 1 mg/kg subcutaneously
- Unfractionated porcine heparin 80 U/kg intravenously.

Selection criteria for home therapy

Only patients not at high risk for bleeding and without comorbid conditions that require admission should undergo outpatient treatment with low-molecular weight heparins. Even these patients may need to be admitted to the hospital overnight to facilitate intensive patient education and to arrange home health services, and then discharged to begin outpatient low-molecular weight heparin therapy.

One cannot simply write a prescription and send the patient home

Patients with phlegmasia cerulea dolens or iliofemoral DVT felt to be best treated by thrombolysis should be started on intravenous unfractionated porcine heparin and undergo an evaluation by a specialist in vascular medicine.

More detailed inclusion and exclusion criteria are listed in TABLE 1. Initial therapy with unfractionated heparin is not a contraindication to outpatient therapy with low-molecular weight heparin.

Laboratory testing

The baseline laboratory evaluation should include a complete blood count with platelets, a serum creatinine level, a prothrombin time (PT), and an activated partial thromboplastin

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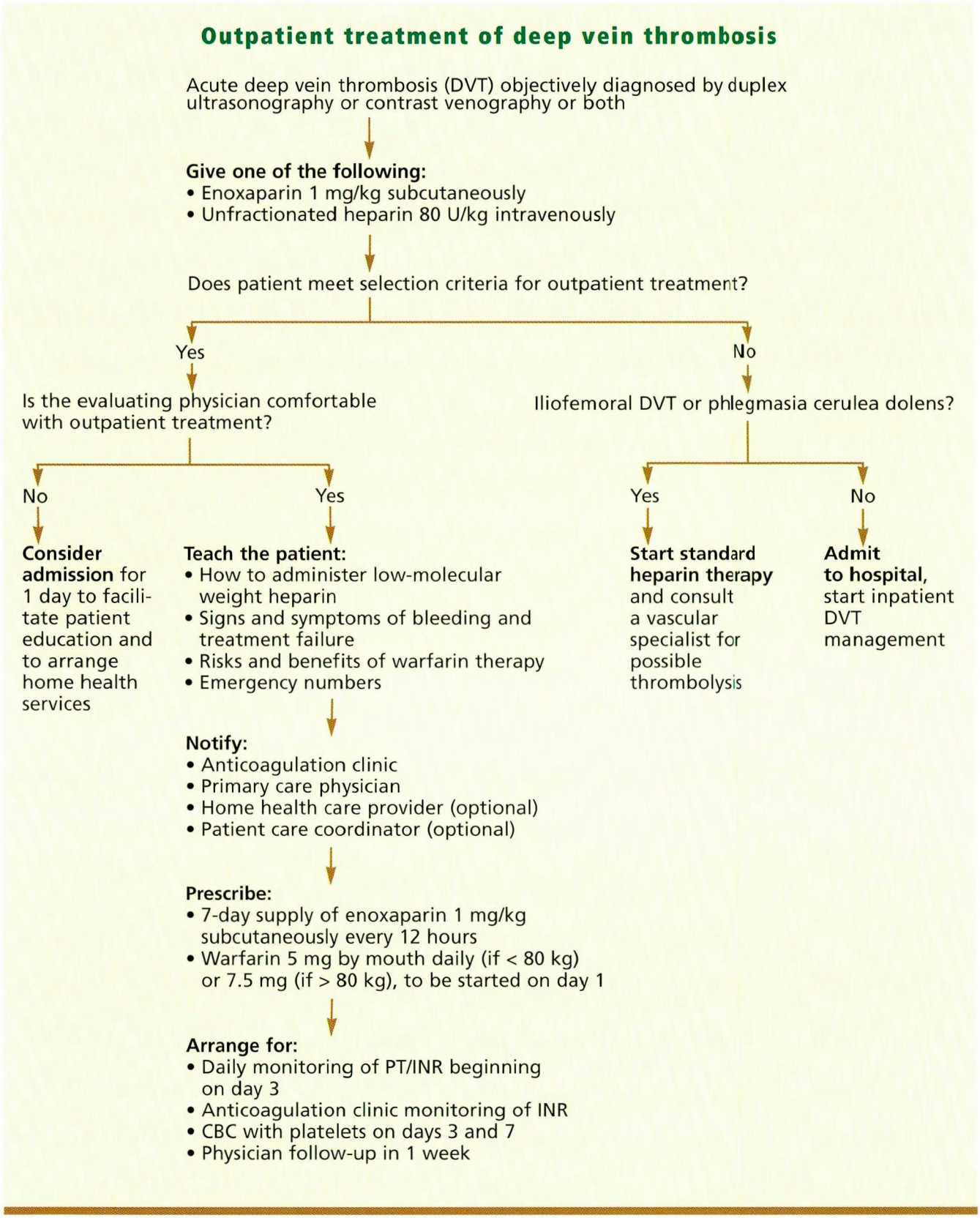

FIGURE 1

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time (aPTT). A comprehensive evaluation for thrombophilia rarely affects acute DVT management and is not recommended in the acute thrombosis setting.

Patient education

A designated physician or nurse should provide detailed verbal and written instructions in how to give oneself subcutaneous injections and how to recognize the signs and symptoms of bleeding, DVT propagation, and pulmonary embolism. Patients should also understand the risks and benefits of this therapy and receive a list of emergency telephone numbers and a written follow-up plan.

Medication prescriptions

Prescribe enoxaparin sodium 1 mg/kg subcutaneously every 12 hours, 7-day supply (dose rounded to either 30, 40, 60, 80, or 100 mg). (Enoxaparin is the only low-molecular weight heparin FDA-approved for outpatient DVT management. The once-daily dosing regimen is only approved for patients without concomitant pulmonary embolism treated on an inpatient basis. Twice-daily administration may be better in cancer patients.)

In addition, prescribe warfarin 5 mg daily (if the patient weighs less than 80 kg) or 7.5 mg (if the patient weighs more than 80 kg), to be begun on the same day as low-molecular weight heparin. The dosage of warfarin must be individualized according to the patient's response to the drug as reflected by the PT and the international normalized ratio (INR). Large loading doses of warfarin may increase the risk of bleeding and possibly of recurrent thrombosis. Low starting doses (2.5 mg daily) are recommended for elderly, undernourished, or debilitated patients and in patients with potential for increased responsiveness to warfarin. The physician must be aware of potential drug interactions and other factors that may affect the INR.

Follow-up

The follow-up plan should include:

- Platelet counts on days 3 and 7 of low-molecular weight heparin therapy
- Daily PT/INRs beginning on day 3 of warfarin therapy with dose adjustment to achieve an INR of 2.0 to 3.0. (Low-molecular weight heparin should be overlapped with warfarin for at least 5 days and until the INR has exceeded 2.0 for 2 consecutive days.)
- A referral to an anticoagulation clinic for INR monitoring
- A physician visit in 1 week. At this visit the patient should undergo an age- and gender-appropriate assessment for an underlying malignancy (eg, chest radiography, prostate-specific antigen test, stool guaiac test, rectal, breast, and pelvic exam).
- Daily assessment by a home health care nurse, especially for elderly and homebound patients.

TABLE 1

Criteria for outpatient DVT treatment

Inclusion criteria

- Proximal deep vein thrombosis (DVT) or symptomatic calf DVT
- Age > 18 years
- Medically and hemodynamically stable
- Willing and able to be sent home from the physician's office, clinic, or emergency department

Exclusion criteria

- Iliofemoral DVT felt to be best treated by thrombolysis
- Phlegmasia cerulea dolens
- Objectively documented symptomatic pulmonary embolism
- Pregnancy or childbearing potential without adequate contraception
- Gastrointestinal bleeding within the past 10 days
- Positive stool guaiac
- History of bleeding disorder or intracranial hemorrhage
- Major surgery, trauma, or stroke within the past 2 weeks
- Need for nonsteroidal anti-inflammatory drugs or aspirin
- Severe renal dysfunction (creatinine clearance < 30 cc/minute)
- Comorbidity requiring hospitalization
- History of heparin-induced thrombocytopenia
- Potential for medication noncompliance
- Lack of language and learning skills conducive to self-management
- Unsuitable home environment to support therapy
- Morbid obesity

SUGGESTED READING

Gent LM, Hirsh J, Leclerc J, et al. A comparison of low-molecular-weight heparin administered primarily at home with unfractionated heparin administered in the hospital for proximal deep-vein thrombosis. N Engl J Med 1996; 334:677–681.

Kessler CM. Low molecular weight heparins: Practical considerations. Semin Hematol 1997; 34(Suppl 4):35–42.

Weitz JI. Low-molecular-weight heparins. N Engl J Med 1997; 337:688–691.

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