rivaroxaban  (ri-va-rox-a-ban)

Classification
Therapeutic: anticoagulants
Pharmacologic: antithrombotics, factor Xa inhibitors

Pregnancy Category: C

Indications
Prevention of deep vein thrombosis that may lead to pulmonary embolism following knee or hip replacement surgery. Reduction in risk of stroke/systemic embolism in patients with nonvalvular atrial fibrillation. Treatment of and reduction in risk of recurrence of deep vein thrombosis or pulmonary embolism.

Action
Acts as selective factor X inhibitor that blocks the active site of factor Xa, inactivating the cascade of coagulation. Therapeutic Effect: Prevention of blood clots and subsequent pulmonary emboli following knee/hip replacement surgery.

Pharmacokinetics
Absorption: Well absorbed (80%) following oral administration; absorption occurs in the stomach and decreases as it enters the small intestine.
Distribution: Unknown.
Metabolism and Excretion: 51% metabolized by the liver; 36% excreted unchanged in urine. Metabolites do not have anticoagulant activity.
Half-life: 5–9 hr.

TIME/ACTION PROFILE (anticoagulant effect)
<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>unknown</td>
<td>2–4 hr†</td>
<td>24 hr</td>
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</tbody>
</table>

† blood levels

Contraindications/Precautions
Contraindicated in: Hypersensitivity; Active major bleeding; Severe renal impairment (CrCl < 30 mL/min); Active liver disease; Concurrent use of drugs that are combined P-gp inducers/strong CYP3A4 inhibitors; Concurrent use of drugs that are combined P-gp inhibitors/strong CYP3A4 inhibitors.

Use Cautiously in:
Neuroaxial spinal anesthesia or spinal puncture, especially if concurrent with an indwelling epidural catheter, drugs affecting hemostasis, history or traumatic/repeated spinal puncture or spinal deformity (risk of spinal hematoma);
OB: Use only if potential benefit outweighs potential risk.

Adverse Reactions/Side Effects
CNS: Syncope.
Derm: Blister, pruritus.
Hemat: BLEEDING.
Local: Wound secretion.
MS: Extremity pain, muscle spasm.

Interactions
Drug-Drug: Rivaroxaban acts as a substrate of these subsets of the CYP450 enzyme system: CYP3A4/5, CYP2J2 and ABCG2 (ATP-binding cassette G2). Drugs which inhibit or induce these systems may alter effectiveness. Concurrent use of drugs that are combined P-gp inducers/strong CYP3A4 inhibitors, including ketoconazole, itraconazole, lopinavir/ritonavir, indinavir/ritonavir, and conivaptan may ↑ levels; avoid concomitant use. Concurrent use of drugs that are combined P-gp inhibitors/strong CYP3A4 inhibitors, including carbamazepine, phenytoin, or rifampin may ↓ levels; avoid concomitant use. Concurrent use of aspirin or NSAIDs may ↑ the risk of bleeding. Concurrent use of clopidogrel or other anticoagulants may ↑ risk of bleeding and should be avoided.
Drug-Natural Products: St. John’s wort may ↓ levels of rivaroxaban and should be avoided.

Route/Dosage
Prevention of Deep Vein Thrombosis Following Knee or Hip Replacement Surgery
PO (Adults): 10 mg once daily, initiated 6–10 hr post-operatively (when hemostasis is achieved) continued for 5 days after hip replacement or 12 days after knee replacement.

Reduction in Risk of Stroke/Systemic Embolism in Nonvalvular Atrial Fibrillation
PO (Adults): 20 mg once daily with evening meal.

Information
- Cost-saving alternative indicated most frequent.

Infrequent = Discontinued.
Renal Impairment

PO (Adults): CCr 15–50 mL/min—15 mg once daily with evening meal.

Treatment of and Reduction in Risk of Recurrence of Deep Vein Thrombosis or Pulmonary Embolism

PO (Adults): 15 mg twice daily for 21 days, then 20 mg once daily for remainder of treatment period.

NURSING IMPLICATIONS

Assessment

- Assess for signs of bleeding and hemorhage (bleeding gums; nosebleed; unusual bruising; black, tarry stools; hematuria; fall in hematocrit or BP; guaiac-positive stools; bleeding from surgical site). Notify health care professional if these occur.

- Monitor patients with epidural catheters frequently for signs and symptoms of neurologic impairment. Epidural catheter should not be removed earlier than 18 hrs after last administration of rivaroxaban; next dose should be at least 6 hrs after catheter removal.

- Lab Test Considerations: May cause q serum AST, ALT, total bilirubin and GGT levels.

Potential Nursing Diagnoses

- Ineffective tissue perfusion (Indications)
- Risk for injury (Side Effects)

Implementation

- When switching from warfarin to rivaroxaban, discontinue warfarin and start rivaroxaban as soon as INR 3.0 to avoid periods of inadequate anticoagulation.

- When switching from anticoagulants other than warfarin to rivaroxaban, start rivaroxaban 0 to 2 hr prior to next scheduled evening dose and omit dose of other anticoagulant. For continuous heparin, discontinue heparin and administer rivaroxaban at same time.

- When switching from rivaroxaban to warfarin or other anticoagulants, no data is available. May discontinue rivaroxaban and begin both parenteral anticoagulant and warfarin at time of next rivaroxaban dose.

- PO: Administer first dose 6–10 hrs after surgery, once hemostasis has been established. 10 mg tablet may be administered without regard to food; 15 mg and 20 mg tablet should be taken with food.

- If unable to swallow tablet, 15 mg and 20 mg tablets may be crushed, mixed with applesauce, and administered immediately after mixing. Follow dose immediately with food. Tablets are stable in applesauce for up to 6 hr.

- If administering crushed tablet via GI feeding tube, check placement of tube. Rivaroxaban is absorbed from the GI tract, not the small intestine. Suspending crushed tablet in 50 mL water and administer. Follow administration of 15 mg or 20 mg tablet immediately with food.

- Discontinue at least 24 hr prior to surgery and other interventions. Restart as soon as hemostasis has been re-established.

- If rivaroxaban must be discontinued for other than bleeding, consider replacing with another anticoagulant; discontinuation increases risk of thrombotic events.

- PO: Administer first dose 6–10 hrs after surgery, once hemostasis has been re-established. 10 mg tablet may be administered without regard to food. 15 mg and 20 mg tablet should be taken with food.

Patient/Family Teaching

- Instruct patient to take medication as directed. Take missed doses as soon as remembered that day. If taking 15 mg twice daily, may take two 15 mg tablets to achieve 30 mg daily dose, then return to regular schedule. Eliciting 15 mg, 15 mg, or 20 mg once daily, take missed dose immediately. Inform health care professional of missed doses at time of checking of lab tests. Inform patients that anticoagulation effect may persist for 2–3 days following discontinuation. Advise patient to read Medication Guide before starting therapy and with each Rx refill in case of change. Caution patients not to discontinue medication without consulting health care professional.

- Advise patient to report any symptoms of unusual bleeding or bruising (bleeding gums; nosebleed; black, tarry stools; hematuria; excessive menstrual flow) and symptoms of spinal or epidural hematoma (tingling, numbness, especially in lower extremities; muscular weakness) to health care professional immediately.

- Inform patient not to drink alcohol or take other Rx, OTC, or herbal products, especially those containing aspirin or NSAIDs, or start or stop any new medications during rivaroxaban therapy without advice of health care professional.

- Advise females to notify health care professional if pregnancy is planned or suspected or if breast feeding.

Evaluation/Desired Outcomes

- Prevention of blood clots and subsequent pulmonary emboli following knee/hip replacement surgery. Duration of treatment is 15 days for patients with hip replacement and 12 days for patients with knee replacement surgery.

Why was this drug prescribed for your patient?