

Chernecky & Berger: Laboratory Tests and Diagnostic Procedures, 5th ed.

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Capillary Fragility Test (Rumpel-Leede Tourniquet Test)—Diagnostic

Norm.

Negative or 1+.

Within a radius of 2.5 cm:

Females = 10 or less petechiae

Males = 5 or less petechiae

Increased.

Aplastic anemia, acute leukemia, chronic nephritis, decreased estrogen level in postmenopausal females, disseminated intravascular coagulation, dysproteinemia, factor VII deficiency, fibrinogen deficiency, Glanzmann's disease, hereditary telangiectasia, influenza, idiopathic thrombocytopenia purpura, liver disease, measles, polycythemia vera, prothrombin deficiency, scarlet fever, *Stachybotrys chartarum* fungus, thrombocytopenia, scurvy, vascular purpura, vitamin K deficiency, and von Willebrand's disease. Drugs include long-term steroid use, and selective serotonin reuptake inhibitor antidepressants. Herbal or natural remedies include *Ruscus aculeatus* (butcher's broom).

Decreased.

Drugs include glucocorticoids.

Description.

This test, also known as the tourniquet test, is a nonspecific evaluation to measure capillary wall weakness and deficiencies in platelet number and function. An inflated blood pressure cuff at a specific pressure for a fixed period of time produces increased pressure and hypoxia in the capillaries distal to the cuff. Decreased capillary resistance causes the capillaries to rupture, which leads to bleeding and the formation of petechiae.

Professional Considerations

Consent form NOT required.

Risks

Bleeding, infection, hematoma, ecchymosis.

Contraindications

The test is contraindicated if routine tourniquet use for drawing blood specimens produces petechiae. This test is contraindicated in clients who have edematous or very cold arms or if there are contraindications to placing or inflating a blood pressure cuff on the arm (such as casts, rash, dressings, arteriovenous fistula). Other contraindications include platelet count $<50,000/\text{mm}^3$, severe bleeding disorders, anticoagulant therapy, or

senile skin changes, or if the client has taken medications containing aspirin within 7 days before the test.

Preparation

1. Obtain a blood pressure cuff, manometer, and watch.
2. Inspect the arm carefully for the presence of preexisting petechiae.

Procedure

1. Apply a blood pressure cuff to the arm and inflate to a level midway between the client's systolic and diastolic pressures but not higher than 100 mm Hg.
2. Leave the cuff inflated for 5 minutes and observe the arm at least 1 inch distal to the cuff for the formation of petechiae.
3. The test results are reported in a range from negative to +4, depending on the number of petechiae appearing in a 5-cm diameter circle:

Negative = No petechiae

+1 = 1–10 petechiae

+2 = 11–20 petechiae

+3 = 21–50 petechiae

+4 = >50 petechiae

If preexisting petechiae are present, count the number of additional petechiae formed during the test.

Postprocedure Care

1. Deflate and remove the blood pressure cuff.
2. Client should open and close the hand to hasten blood return to the distal extremity.

Client and Family Teaching

1. A good explanation of the test procedure is essential because the test may cause discomfort to the client.

Factors That Affect Results

1. Failure to keep the cuff inflated for 5 minutes.

Other Data

1. A positive test in women >40 years old may not be pathogenic.
2. A variation of this positive-pressure test is the negative-pressure test, in which a small suction cup is applied for 1 minute to the skin and the number of resulting petechiae are counted.
3. The test should not be repeated on the same extremity for at least 1 week.

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