DIAGNOSTIC PROCEDURES IN GASTROENTE ROLOGY

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1. Indication

Intra Esophageal Acid Purfusion or Bernstein Test is used to evaluate pain that may be related to Acid ésophagitis. The test was developed as an aid in the diagnosis of esophagitis[1] Since esophageal pain may be very much similar to discomfort that arises from other conditions specially cardiac disease, Bernstein test is an attempt to reproduce the pain that arisEs in esophagus as a consequence of esophageal spasm or inflammation.

The procedure is relatively simple, inexpensive and can be done any where in hospital or clinic in Pakistan.

2. Preparation of Solution

a) Take two 500 c.c. bottles of normal Saline, label one bottle “S” and one bottle “A”.

b) Open the “A” bottle and pour out 50 c.c. of Saline solution with a 50 c.c. Syring, add’ 50 c.c. 1.N Hydrochloric acid to the remaining 450 c.c. of normal saline. This will constitute 500 c.c. of a 0.1 .N Hydrochloric acid solution.

c) Connect Y type I.V. tube into “A” and “S” and suspend bottles from an I.V. pole.

d) Close the “A” tubing and open the “S” tubing thereby filling the tubing with normal saline.

3. Preparation of Patient

a) Patient should fast after mid-night.

b) No analgesics or antacid should be taken prior to this test.

c) Explain this test in simple words to the patient.

d) Ask the patient if he is aheady experiencing any chest or upper abdominal pain or discomfort and record it, since this may affect the result of the test.

4. Intubation

A 14 to 16 F size Nasogastric tube is passed into the stomach and gastric contents are aspirated. Then tube is withdrawn to the level at which the tip is 30 to 35 cm. from the flares.

5. Procedure

i) Have intubated patient comfortably seated. Stand with “S” and “A” label bottles behind the patient so that solution cannot be seen by the patient.

ii) Attach 1.V. tubing to the nasogastric tube. Run the fluid from “S” bottle at a rate of 120 drops per minute. The Saline drip is maintained at this rate for five minutes. Instruct patient to describe any discomfort throughout the procedure, ask questions frequently.

iii) Close the tubing leaving from “S” bottle and then open the tubing leading from “A” bottle without making patient aware of it. There is usually no need to adjust the main control as flow rate has to be constant at 120 drops per minute.

iv) Continue the intra esophageal drip of O.1.N Hydrochloric acid from “A” bottle until the patient reports a sensation of warmth, pain or discomfort. Ask patient whether sensations are new or it resembles the problem that had occurred at home or previously.

v) If no discomfort occurred after 30 to 60 minutes of “A” drip the test may be terminated but if discomfort occurs during the course of acid infusion, record the nature, location and intensity. Close the tubing leading from “A” bottle and open “S” bottle without patient’s knowledge.

vi) Continue the saline drip until the discomfort disappears or diminishes considerably. If the pain or discomfort disappears one may return to the acid drip again to determine whether there is relationship between patient’s discomfort and acid perfusion. This can be done several times to establish this relationship.

vii) Test is concluded with final five minutes drip of saline and then 30 c.c. of antacids placed down the Nasogastric tube. Make record of responses of final Saline drip and to the antacid.

Interpretation of Bernstein Test should be made in the light of following facts.

1. Distribution of symptoms, a retrosternal burning sensation or discomfort that extends above the xiphoid is presumed to be of esophageal in origin. Occasionally discomfort may be felt in
2. Rapidity of disappearance of symptoms on the upper abdomen. discontinuation of acid perfusion is suggestive of its origin in esophagus rather than stomach, so is rapidity of disappearance of symptoms after antacid administration.
3. Repetitive production and relief of symptoms establishes relationship between discomfort and acid produced esophagitis.
4. Bernstein test is one of the most sensitive way to diagnose acid reflux esophagitis (80-100%) even when it is not detectable grossly on endoscopic examination or Radiological examination.[1-3]
5. If esophagitis is present, usually discomfort is noted within 10-15 minutes of acid perfusion, and though a positive test indicates that discomfort arises in esophagus but does not necessarily mean presence of esophagitis.
6. Rarely patients with esophageal disease do not experience discomfort during the test. A negative test is not necessarily indicative that esophagitis or esophageal spasm is not the cause of chest discomfort. So other tests like X-rays, Endoscopy, biopsy, manometry etc. may be needed.
7. Patients known to have angina may be able to differentiate response to acid drip and their usual angina pains.

References

1. Bernstein, L.M. and Baker, L.A.A. Clinical test for oesophagitis. Gastroenterology, 1958; 34: 760.
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3. Tuttle, S.G. ,Betarello, A. and Grossman, M.L Esphageal acid perfusion test and a gastroesophageal reflux test in patients with esophagitis. Gastroenterology, 1960; 38 : 861.