FINE NEEDLE PERCUTANEOUS TRANSHEPATIC CHOL&NGIOGRAM (PTC)

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Ziauddin Shamsi, Mohammad Aftab Anwar (G.I. Consultants, 5/15, Rimpa Plaza, M.A. Jinnah Road, Karachi.)
Mohammad Naeemullah Khan (G.I. Consultants 5/15, Rimpa Plaza, M. A. Jinnah Road, Karachi.)

DEFINITION

Fine Needle Percutaneous Transhepatic Cholangiography is a simple, accurate and inexpensive radiological method to visualise the biliary system in patients suspected of mechanical biliary obstruction.[1]

INDICATION

1. Clinical suspicion of mechanical obstruction of the biliary tree.
2. Suspicion of tumors at bifurcation of the common hepatic duct or lesions high in the biliary tree that can be missed by other diagnostic modalities (E.R.C.P. Ultrasound, CT Scan) and even during laparotomy.
3. In patients presented with jaundice and pancreatitis with a diagnostic problem. [2]
4. In patients where the normal anatomy of gastrointestinal tract has been altered by previous surgical procedures and the exact level of obstruction is to be determined pre-operatively[3]
5. In establishing the diagnosis of diffuse intrahepatic bile duct abscesses. [4]
6. Prior to temporary or permanent transhepatic drainage.

PREPARATION

1. Patient should be admitted to the hospital.
2. PTC is usually performed in the radiology department under image intensifire fluoroscopic control.
3. Patient is reassured and the procedure is explained in simple words.
4. Sedation is unnecessary in most of the cases.
5. Pre-operative evaluation of the patient should be included:

a) Coagulation profile (i.e. Prothrombin Time, Activated Partial Thromboplastin Time, Bleeding Time, Platelet) determination.
b) Evaluation of respiratory status.
c) Patients suspected of complete obstruction or cholangitis should receivô parenteral antibiotic coverage for Gram Negative Sept

POSITION AND SITE

With the patient lying supine, one of the two approaches may be used:

1. In the first, left hepatic duct system is studied, utilizing a long 7, 20G or 21G needle inserted subeostally under local anaesthesia in the mid-clavicular line during apnoea.
2. The second approach is used to enter the right hcpatic duct system. The needle is inserted approximately in 9th intercostal space in mid-axillary line.

MATERIAL

1. One-two-way stopcock.
2. Intravenous extension tubing.
3. 25, 10,20cc. Syringes.
4. 18,22,250 needles.
5. Hemostat.
6. Skiny (Chiba) needle.

7. Sterilized pack containing Gauzes, Gloves, Forceps, Bowls, Draping towck
8. 2% Xylocaine.

TECHNIQUE

The patient is placed supine on the X-ray table with the arm raised above the head. Some like to place a radio-opaque marker over the xyphisternum at the level of inter-space between 11th and 12th vertebral body. After proper skin cleaning and draping with sterile towels, a point of hepatic dullness (normally in 8th or 9th intercostal space) in the midaxillary line is chosen and anaesthetised with 2% xylocaine (injecting intradermally and then subcutaneously upto hepatic capsule). Then either through the hole made in the skin and subcutaneous fascia with a skin piercer or knife blade, a fine needle (Chiba) is introduced with the stylet in place during end expiratory apnoea. The needle is rapidly passed just to the right of the marker at about 300 cephaloid direction, usually perpendicular to the table. The stylet is then removed and dye injected slowly as the needle is slowly withdrawn until contrast is seen to enter the biliary tree. The rate and direction of flow of the dye usually differentiates the biliary tree from blood vessels and lymphatics. If the biliary tree is not entered, six or seven passes maybe made first more posteriotly and then more anteriorly. After the biliary tree is entered an effort should be made not to overdistend the biliary tree by alternate aspiration of bile and injection of dye. After having the biliarytree filled with dye the patient is examined radiographically in various positions for a satisfactory visualization of the biliazy tree. Some investigators instead of connecting the contrast syringe directly to the needle, like to place a rubber tube with a tree way, to avoid movement of the needle while in the desired place. It is generally agreed that the biiary tree should be decompressed as much as possible before withdrawing the needle.

POST-OPERATWE CARE

1. The patient should be kept on the right side for two to three hours after the procedure, if possible, and he should remain in bed for 24 hours.
2. Vital signs should be checked for the first few hours.
3. Systemic antibiotic should be continued for atleast 48 hours or till after surgery in patients with mechanical obstruction.

COMPLICATIONS

1. Pain.
2. Sepsis (Cholanjtis).
3. Bile leakage[5,6]
4. Hemorrhage.
S. Pneumothorax.
6. Vaso-vagal reaction.
7. Arterio-venous fistula of liver.
8. Injection of contrast material into blood stream may produce reaction (as bronchospasm, hypotension, urticaria, pm-this).
9. Death.

CONTRA-INDICATION

1. Bleeding and dotting abnormalities.
2. Hypersensitivity to contrast material.
3. In whom subsequent surgery could not be tolerated.
4. Marked ascites.

ADVANTAGES

1. PTC is simpler, quicker, easier and a less expensive procedure.
2. A lesser degree of expertise is required, than ER.C.P.
3. The needle is extremely thin (0.7mm. outer diameter) and flexible so the patient may breathe normally while it lies in situ.
4. Non obstructed ducts may be opacified in the majority of cases.

5. Even if complete common bile duct is demonstrated by other methods (e.g. E.R.C2.), subsequent performance of PTC is desirable to locate with reliability the proximal demarcation of the obstructing process, which is important in planning the surgical procedure.
6. The success rate in visualizing the biliary tree is high (95% to 100%).

COMMENTS

1. Prior to popularization of Fine Needle Percutaneous Transhepatic Cholangiôgraphy by Okuda in 1974 in Japan, Transhepatic Cholangiography was strictly a pre-operative procedure. Since a large bore inflexible needle was used and aspiration (rather than injection of dye) of bile to locate a bile duct used to be carried out the procedure was not only difficult but also liable to be associated with a high risk of bile peritonitis.
2. Percutaneous Transhepatic Cholangiography now can be done by anyone with experience of doing liver biopsies and familiar with hepato-biliary radiology.

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