

PERCUTANEOUS PLEURAL BIOPSY *

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Percutaneous Needle Biopsy of the parietal pleura has provided a simple, safe, and accurate means of determining the etiology of pleural lesions. It was recognised for many years that in many Cases of Pleural effusion the physicians were unable to establish a rapid and accurate diagnosis, one of the reasons being of the limitation of available technics. Because of the realisation of the demand for additional and more accurate methods, a direct tissue examination of diseased pleura was established. Pieces of parietal pleura have been excised under direct vision for diagnostic purposes by Lloyed (1953)¹¹, Sutliff et al (1954)¹¹, Small and Landman, (1955)¹⁷, and Breckler et al (1956)¹². In 1955 Stead et al published the results of thoracotomies performed on 24 patients, with the syndrome of idiopathic pleurisy, with effusion. De Francis Etal, (1955)¹, Heller Etal (1956)¹⁵, and Donnhoe et al (1957)⁴, used a Vim - Silverman Needle to obtain an aspiration Biopsy of Pleura. Paul Mestitze et al (1957)¹¹, Abrams (1958)¹, used a punch biopsy technic. Again in 1958 Mestitze et al reported 28 punch - biopsies of parietal pleura, with a high percentage of accuracy.

Subsequently pleural Needle Biopsy has been employed as a diagnostic aid, with increasing frequency. Recently 124 cases have been reported by Rao et al (1965)¹⁵.

The apparent simplicity and safety of the procedure, without morbidity or discomfort to the patients prompted us to pursue percutaneous pleural biopsy in Tehran.

Materials and Methods. :

22 pleural biopsies were carried out on 20 patients. In 15 patients, with a modified Vim - Silverman needle and in 5 patients a curetting type

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of needle have been sued. This latter instrument was given to us by Professor Pezeshgan, Professor of Urology of the university of Teheran. 12 of the patients were male and 8 female, the youngest one a Male of 25 years old and oldest a Female of 72 years. Bleeding, clotting and prothrombine time were routinely determined to rule out any coagulation defect prior to biopsy. All patients had a recent roentgenogram of the chest and all had their full medical examination.

The Modified Vim - Silverman Needle Procedure: Under aseptic condition 1 or 2% xylocain is injected intradermally and subcutaneously to obtain local anesthesia down to parietal pleura. In the case of the presence of pleural effusion a 19-gauge Needle attached to a syringe is then inserted into the pleural space while the operator maintains a slight negative pressure, by gentle traction on the barrel of the syringe. When fluid is obtained the advance of the Needle is stopped and about 50 cc of the pleural fluid is removed and fluid recovered is submitted for cytological and histochemical study.

In the cases of pleural adhesion, thickening or the absence of pleural fluid, I do not use this aspiration technique. A small skin incision is made to facilitate the introduction of the Vim-Silverman Needle. Care is taken to direct the point of the Needle away from the vessels and nerves located along the inferior margin of each rib. The Needle is advanced until resistance of the parietal pleura is encountered. The stylet is removed and if fluid is seen to emerge, the Needle is gently withdrawn until the fluid stopped. The split Needle of the V. S. Needle is then inserted to its full depth. The outer Needle is advanced a centimeter, or so to brace the ends of the split Needle and then the entire assembly is rotated through 360 and withdrawn. A small piece of tissue is usually found within the split Needle. Several pieces of pleura are obtained from the adjacent site by manouvering the Needle, in a slightly different direction, through the same skin incision and repeating the procedure.

The site chosen for biopsy was the eight or ninth interspace, in the region of the midscapular line. In two cases loculated infection was presented and the biopsy site was determined by infusing (SORKHE - HESSAR - HOSPITAL).

The Necker's Curetting Type
two parts. A sharp

curett of the Needle is terminated at the point end as a shelf to prevent the escape of the specimen on withdrawal from the chest. The inner stylet curett is one or two centimetre longer than the outer canula; however, the sharp pointed end of the curett fits easily into the canula.

The stylet is screwed at the bottom with a 4cm. long, wide cylinder, at the side of the cylinder, there is a shape, the outer canula fits, easily into the cylinder.

The canula has a small screw and with the aid of this screw the canula can move along the shape slit of the cylinder. When the stylet is inserted and screwed the Needle is ready to use. The Needle's parts can be separated during the procedure. The procedure is as follows:

The Needle (when the screw is at the end of the L shaped slit and the stylet is braced with the cylinder) until the resistance of the parietal pleura is encountered, the Needle is inserted to its full depth. The distance between the Needle and the skin.

The stylet is then turned across the short L shape slit. While the screw reaches the end of the L shape slit, the hand advancing the outer canula to its full depth is withdrawn. A small piece of the hollow part of the curett is removed in different directions through the procedure, several

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In the cases of pleural adhesion, thickening or the absence of pleural fluid, I do not use this aspiration technique. A small skin incision is made to facilitate the introduction of the Vim-Silverman Needle. Care is taken to direct the point of the Needle away from the vessels and nerves located along the inferior margin of each rib. The Needle is advanced until resistance of the parietal pleura is encountered. The stylet is removed and if fluid is seen to emerge, the Needle is gently withdrawn until the fluid stopped. The split Needle of the V. S. Needle is then inserted to its full depth. The outer Needle is advanced a centimeter, or so to brace the ends of the split Needle and then the entire assembly is rotated through 360 and withdrawn. A small piece of tissue is usually found within the split Needle. Several pieces of pleura are obtained from the adjacent site by manouvering the Needle, in a slightly different direction, through the same skin incision and repeating the procedure.

The site chosen for biopsy was the eight or ninth interspace, in the region of the midscapular line. In two cases loculated infiltration was presented and the biopsy site was determined by roentgenoscopy (SORKHE - HESSAR - HOSPITAL).

The Necker's Curetting Type Needle: This Needle consists of two parts. A sharp-end stylet curett in which the hollow or navicular

curett of the Needle is terminated at the point end as a shelf to prevent the escape of the specimen on withdrawal from the chest.

The inner stylet curett is one or two centimetre longer than the outer canula; however, the sharp pointed end of the curett fits easily in the canula.

The stylet is screwed at the bottom with a 4cm. long, wide calibre cylinder, at the side of the cylinder, there is a shape, the end of the outer canula fits, easily into the cylinder.

The canula has a small screw and with the aid of this screw, the canula can move along the shape slit of the cylinder. When this instrument is inserted and screwed the Needle is ready to use, and none of the Needle's parts can be separated during the procedure. Under the same conditions, with a V. S. Needle (asepsies, local anesthesia, etc.). The procedure is as follows:

The Needle (when the screw is at the end of the short hand of the L shaped slit and the stylet is braced with the canula) is advanced until the resistance of the parietal pleura is encountered. If the pleural resistance cannot be appreciated, the Needle is inserted to a measured depth ascertained, by noting the distance between the tip of the aspirating Needle and the skin.

The stylet is then turned across the short hand of the shape slit and then advanced until the screw reaches the end of long hand of the L shape slit. While the stylet is held with the right hand, with the left hand advancing the outer canula to its full depth, then turns. The entire assembly is withdrawn. A small piece of tissue is usually found within the hollow part of the curett. By manouvering the Needle in slightly different directions through the same skin incision and repeating the procedure, several pieces of tissue are obtained.

RESULTS:

22 Biopsies were performed. An adequate tissue specimen, was obtained in all but 3 patients in whom there was not pleural effusion. The procedure was as well tolerated as a standard thoracentesis. The results of the biopsies are shown in Table 1. All biopsy specimens were processed and reported by the department of Pathology. A considerable range of histological findings has been encountered.

TABLE I
TOTAL RESULTS OF PERCUTANEOUS PLEURAL BIOPSY
WITH 2 PROCEDURES (20 PATIENTS)

Diagnosis	No. of Patients	Percentage%
Malignancy	2	10%
Tuberculous Granuloma	2	10%
Suppurative Reaction	2	10%
Non Specific Inflammatory Reac.	6	30%
Fatty Tissue Probably Lipoma	1	5%
Inadequate Tissue	3	15%
Fibromuscular Tissue	3	15%
Hepatic Tissue	1	5%
TOTAL	20	100%

In some cases a layer of normal pleura was present. Abnormal findings were reported as : acute or chronic non specific inflammatory change, thickened pleura without active inflammatory change, changes regarded as suggestive or diagnostic of Tuberculosis, and finally features regarded as suggestive or diagnostic of malignant disease. In three cases a few strands of stripped muscle and in one case hepatic tissue was diagnosed.

The positive diagnosis in the present series have been limited to tuberculous granuloma and malignant disease. Pagel and Goldforb (1960)¹⁴ in their series one case was reported, in which the findings were believed to be suggestive of a rhumatic etiology.

A repeated examination was done in two cases, when the first specimen was unsatisfactory. Unfortunately in other three cases the biopsy was not repeated in spite of poor or non-specific results of the initial procedure.

Pleural Biopsy was performed in all cases, when the diagnosis was doubtful.

Like mestitz et al (1958) We divided our cases into three groups. Group I. consisted of patients who had a pleural effusion and in whom our first object was to determine its causes. In group II. the pleural effusion was not the outstanding clinical feature, but there was a thick pleural adhesion and thickness was the most outstanding. Group III. included the remaining cases in which there was no effusion and no adhesion.

TABLE II
BIOPSY DIAGNOSIS IN THE WHOLE SERIES
Biopsy Results

Group	No. of Cases	T B. Granulom	Malig.	Non Spec. Inflm. Reac.	Undeter. & in adequate
I	12	1	1	6	4
II	4	1	1	1	1
III	4	—	—	1	3
TOTAL	20	2	2	8	8

GERERAL CONSIDERATION :

Procedures :

Various procedures of different Authors for the histological examination of pleura have been published. They are of three types.

- a. - Thoracoscopy and thoracotomy.
- b. - Surgical biopsy.
- c. - Percutaneous Needle biopsy.

Mestitz et al (1958) mentioned this different procedure, with their results. Between these various procedures percutaneous Needle biopsy seems more safe, and more valuable. Rao et al (1965) reviewed the Literature and tabulated the names of Authors that used percutaneous Needle biopsy. The inadequate specimens ranged between 5 to 66 percent.

Needles :

Again various Needles of different designs have been used for biopsy of the parietal pleura. They include :

1. - Vim - Silverman : This Needle has been used in many percutaneous biopsy (Renal, Splenic, Hepatic, etc.). Sison et al in 185 Patients, with 20% insufficient material.¹⁸ Rao et al in 124 cases, with 76% adequate tissue for diagnosis.¹⁵

Welsh¹⁹, Howard¹⁵, Monferedi¹⁰ and Hanson⁵ separately employed this needle in an experienced hand this needle is the most useful one.

2. - Franseen . Harvey and Harvey used this Needle in 42 patients, with 31% positive results.

3. - Abrams or Harefield Needle : This is a punch - biopsy Needle and is the favorite Needle of mestitz et al and some others.

4. - Cope : This is a blunt - Needle which was used by Cope (1958)², Niden et al (1961)¹³ Levine et al (1962).⁸

5. - Kerrison Rongeur : Bkowarn used this Needle punch biopsy (1960).

6. - Carpenter : this is a modified cope Needle.

7. - Necker's Needle. I am the only that used this Needle for pleural biopsy. Originally this Needle was performed for renal biopsy, but in my opinion this is one of the best instruments for percutaneous pleural biopsy, In my patients all had adequate tissue for diagnostic purposes.

* The Needle is manufactured by "Collin Gentile and Cie, Paris". in order to Necker's Hospital, Paris for Renal Biopsy.

SUMMARY

I have carried out 22 biopsies in 20 Patients, in fifteen I used a Vim - Silverman Needle, and in the remainder a curetting type Needle, In 12 cases (60%) the diagnosis that was made; in 3 cases, inadequate tissue, was obtained; in two cases a fibromuscular tissue, in one case a fatty tissue and in one case the specimen was of hepatic tissue.

Even with the small biopsy specimen obtained with the Needle it is easy to recognize malignant tissue if present.

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Wish to express my appreciate in to my Colleague Pathologist, who made Histological examinations of the specimens recovered.

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GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY IN IRAN AND ITS RELATION TO PHYSIO-PATHOLOGICAL PROCESSES (*)

I. A Preliminary Report

BY

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The present survey was started in order to map the incidence of glucose - 6 - phosphate dehydrogenase (G - 6 - PD) deficiency in different regions of Iran, to study the disease patterns of the deficient subjects, and to investigate possible therapeutic measures when necessary. This project is the outcome of three separate and independent scientific endeavours.

The first of these is a comparative statistical analysis which suggests that G - 6 - P-D deficient individuals appear to have a lesser probability of developing malignant disease. We have pointed out, however, that no definite conclusion can be drawn from this statistical analysis until a large longitudinal survey has been initiated and followed through for half a generation (1). Biochemical studies carried out concurrently with

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