

# Gynaecomastia in Leprosy

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Gynaecomastia is one of the less frequent complications in leprosy. In a study it was found that only 11.8% of patients with lepromatous leprosy developed gynaecomastia<sup>1</sup>. The clinical features have already been described in a previous paper<sup>2</sup>. In this paper the histopathological appearance of the enlarged mammary gland is described in detail, and its significance is discussed.

## MATERIAL AND METHODS

This study is based on the surgical specimens of gynaecomastia removed from 14 patients with lepromatous leprosy at the Schieffelin Leprosy Research Sanatorium at Karigiri. The tissues were fixed in 10% formalin and processed. Paraffin blocks were made and sections were cut at 6  $\mu$  thickness. Haematoxylin and eosin stain and acid fast stain for *M. leprae* were prepared from several blocks of tissue in each case.

## RESULTS

### *Gross features*

The enlarged mammary gland varied considerably in size from a small nodule of about 2 cm. in diameter to a large one of almost 10 cm. in diameter (Fig. 1). One of the largest specimens weighed 92 g. Clinically it had attained the size of the breast of a young woman (Fig. 2). Most of the specimens were of the larger variety because the patients with small lesions were not willing to undergo surgery.

The outer surface of the specimen was rounded, fairly smooth and clearly defined. There was no definite capsule. The consistency was mostly firm and it cut with considerable

resistance. The cut section was uniformly greyish white. In patchy areas some yellowish fatty tissue was also present.

### *Microscopic findings*

All the specimens showed marked proliferation of connective tissue (Fig. 3) and the enlargement of the gland was primarily due to this increase in the connective tissue. In most cases there was no definite arrangement of the connective tissue which surrounded the ducts. Even though all the specimens contained some fatty tissue it often formed only a small part of the mass.

There was also a significant proliferation of the ducts (Fig. 4) and a wide variation was seen in the extent of its proliferative activity. In some, small sized ducts widely spread in a large mass of connective tissue were seen and in others coiled, branched and distended ducts were seen. Occasionally mitoses were present. In every case there was marked increase in the number of layers of the cells lining the ducts (Fig. 5). Sprouting of lining epithelial cells and formation of locules were seen in 11 of the 14 patients examined. Intraductal papilla with connective tissue cores were present in 3 patients. In 1 patient the cellular arrangement resembled very much an intraductal papilloma (Fig. 6). Pseudolobules were present, but true acini were not seen in any of the patients. In 1 patient there was cystic dilatation of the ducts.

Amorphous pink staining material was present inside the ducts in 10 patients (Fig. 7). Cells with basal vacuolation were seen in 8 patients. Shedding of epithelium was present in the ducts in all patients.

Periductal inflammation of varying intensity was present in every patient. The inflammatory cells were scanty in most specimens, but was very marked in 1 patient. The inflammatory cells consisted mostly of lymphocytes and plasma cells.

Total denudation of the wall of the duct was seen in 1 patient (Fig. 8). This was associated with marked inflammatory reaction. Denudation of the wall was followed by destruction of the epithelium and replacement of the duct with fibrous tissue. In 1 patient there were small foci of lepromatous granulomata consisting of lymphocytes and foamy macrophages (Fig. 9). The macrophages contained acid fast bacilli inside the cytoplasm.

#### COMMENTS

The hypertrophied male breast in leprosy consists largely of fibrous connective tissue. Adipose tissue forms only a small part of it. There is also proliferation of ducts which shows considerable variation. Many layered epithelial lining with budding and locule formation is a common feature. Secretion in the ducts is also evident in the majority of patients. However, no true acinar formation is noticed in any one of them. This picture is similar if not the same as described in gynaecomastia associated with conditions other than leprosy. In only 1 patient leprosy granulomata are seen, but they are small foci, present in localised areas and are not obviously responsible for the enlargement of the breast. Therefore, it is reasonable to state that the development of gynaecomastia associated with leprosy is a process similar to those found in gynaecomastia due to other causes.

Karsner<sup>3</sup> while reviewing the literature on the aetiology of gynaecomastia quite justifiably states that the proliferation of connective tissue in the male breast can occur if oestrogenic substances are given for a considerable period of time and that in men oestrogens promote gynaecomastia. In most patients of lepromatous leprosy and in a few patients with borderline group of leprosy, the testis is infiltrated by leprosy granuloma and there is atrophy of the seminiferous tubules. In some of the patients

with testicular lesions the interstitial cells and Sertoli cells are spared and they stand out prominently. These cells are known to produce oestrogens. The presence of excess oestrogens may be an important etiological factor in the pathogenesis of hypertrophy of connective tissue in the breast of lepromatous leprosy patients.

Inflammatory cells are a common finding in the specimens studied. They consist of lymphocytes and plasma cells. They are few and scattered and are not part of leprosy granuloma. Inflammatory cells are also present in gynaecomastia associated with non inflammatory diseases and there is no adequate explanation for their presence.

In all patients there is shedding of cells from the lining epithelium. In 8 patients the lining epithelium shows basal vacuolation. Pinkish secretion is present in the ducts of 11 patients. But it is not identified as colostrum or milk. There is no satisfactory evidence to prove that the enlarged mammary gland in the male secretes milk.

In one case there is marked cystic dilatation of the ducts resembling very much the changes seen in mammary dysplasia. However, this is present in a localised area and the lesion as a whole, is not similar to mammary dysplasia. Two other patients have a superficial resemblance to fibroadenoma. In these patients the fibroadenomatous proliferation is localised and the remainder of the enlarged gland shows a typical picture of gynaecomastia. Menville<sup>4</sup> has also reported similar changes in the patients he studied.

In one patient there is evidence of resolution with fibrous tissue replacing duct epithelium. These areas are small and are of no significance.

#### SUMMARY

The histopathological appearance of 14 patients of gynaecomastia in leprosy is described. Proliferation of connective tissue and duct epithelium are the typical features in all patients. This picture is identical with that described in gynaecomastia due to other causes. Two patients show small foci of lepromatous granuloma. It is

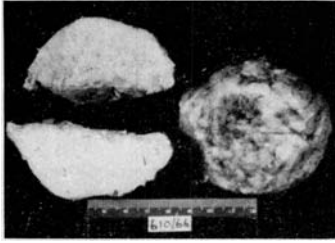


FIG. 1



FIG. 2



FIG. 3

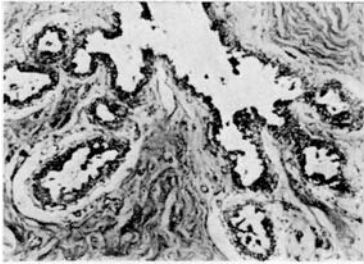


FIG. 4

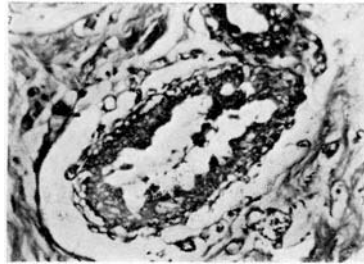


FIG. 5

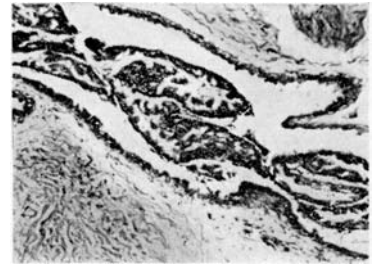


FIG. 6

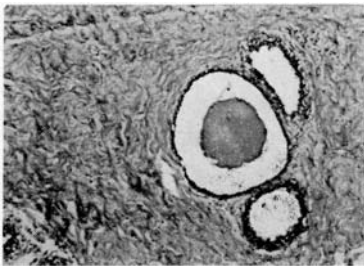


FIG. 7

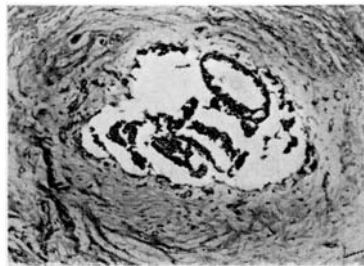


FIG. 8

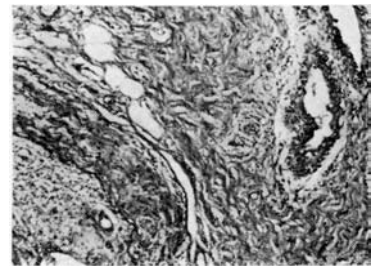


FIG. 9

*Legend to figures*

1. Specimen removed from a patient with bilateral gynecomastia. Note the uniformly greyish cut surface and the fibrous nature of the tissue.
2. Photograph of a lepromatous leprosy patient with well developed gynecomastia.
3. Photomicrograph showing branching ducts surrounded by dense connective tissue. Few small collections of fat cells are also seen (H & E  $\times$  35).
4. Photomicrograph showing the proliferation of the ducts (H & E  $\times$  125).
5. Note the many layered epithelium of the duct and the shedding of the epithelium into the lumen (H & E  $\times$  250).
6. The epithelium of the duct has proliferated considerably and the appearance is very similar to that of an intraductal papilloma (H & E  $\times$  125).
7. Note the dilated duct with secretion inside (H & E  $\times$  125).
8. Photomicrograph showing denudation of the wall of the duct. This is followed by inflammatory reaction and replacement of the epithelium with connective tissue (H & E  $\times$  125).
9. This picture shows lepromatous granulomata around a duct and a nerve bundle. Acid fast stain showed numerous bacilli in the granulomata in both the sites and inside nerve bundle (H & E  $\times$  125).

suggested that just as in gynaecomastia associated with other conditions hormonal imbalance and particularly an excess of oestrogens may be the cause of the enlargement of male breast in leprosy.

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#### REFERENCES

1. HEMERIJCK, F. Report on the Activities of the Leprosy Control Campaign during 1955-58 of the Belgian Leprosy Centre, Polambakkam, Madurantakam (South India), Jawahar Press, 1959.
2. JOB, C. K. Gynaecomastia and Leprous Orchitis. *Internat. J. Lep.*, **29**, (1961) 423-441.
3. KARSNER, H. T. Gynaecomastia. *Amer. J. Path.*, **22**, (1946) 235-315.
4. MENVILLE, J. G. Gynaecomastia. *Arch. Surgery*, **26**, (1933) 1054.