Short Communication

Mammary, testicular and adnexal tuberculosis diagnosed by histology in a rural hospital in Southern Ethiopia

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ABSTRACT

This study describes the experience of mammary, testicle and adnexal tuberculosis (TB) diagnosed by histological characteristics in a rural district hospital in Southern Ethiopia over a period of 7 years. During the same period, a total of 5589 TB cases were diagnosed. Fourteen cases of breast TB with a prevalence of 0.25% (95% confidence interval [CI]: 0.14–0.43), 8 cases of testicular TB (prevalence 0.14, [95% CI: 0.06–0.29]) and two ovarian TB (prevalence: 0.035 [95% CI: 0.001–0.15]). The breast, testes and adnexal TB may mimic other conditions. Proper diagnosis is encouraged because the disease is curable with anti-TB drugs.

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Introduction

Tuberculosis (TB) is one of the leading causes of morbidity and death in adults in sub-Saharan African countries. Ethiopia stands among the 22 countries with the highest TB burden in the world [1]. Approximately, one third of TB cases in developing countries are extra-pulmonary TB (EPTB) [1,2]. The diagnosis of EPTB is usually established either clinically or by histologic means [2]. The most common EPTB is TB lymphadenitis. Mammary TB and genital TB are less common than other EPTB, in part owing to the difficulty in achieving a correct diagnosis, particularly in developing countries [2]. Pathological diagnosis is paramount in these types of patients, but unfortunately it is frequently not available in most rural hospitals and health centers in developing countries.

In the present study, the experience of mammary, testicle and adnexal TB diagnosed by histological characteristics in a rural district hospital in Southern Ethiopia over a period of 7 years.

Patients and methods

The Gambo General Hospital (GGH) is a 135-bed rural general hospital located in West-Arsi zone, 250 km south of Addis...
Ababa. The catchment area of the GGH is restricted to approximately 90,000 inhabitants. Most of the population live in a rural setting and work in agriculture and farming.

For the diagnosis of TB, only sputum smears are available in GGH [2,3]. However, in patients with symptoms or signs suggestive of EPTB, a surgical examination and biopsy can be obtained and submitted to a reference pathological laboratory for diagnosis.

The researchers of this study retrospectively reviewed all pathological reports of patients from the GGH in whom a surgical biopsy of the breast, testicle or ovary was performed from September 2003 until September 2010. All cases of surgical biopsy were diagnosed at the Department of Pathology of the School of Medicine at Addis Ababa University (Ethiopia). Institutional ethical clearance was obtained from the Institutional Ethics Review Committee of GGH.

The epidemiological, clinical and pathological data from the records were transferred to a computer database (Excel 2000; Microsoft). A descriptive statistical analysis was performed. The researchers obtained estimates of the prevalence with 95% confidence intervals (CI) using the Wilson procedure.

**Results**

A total of 177 specimen biopsies of breast, testicle and adnexal were performed in the period of study. Table 1 shows the number of biopsies performed and biopsies positive for TB, age of patients, and prevalence of breast, testicle and adnexal TB. A total of 131 breast histology specimens (80 biopsies, and 52 mastectomies [radical or quadrantectomy]) were sent to the reference pathological center during the study period.

The most common diagnoses were: malignant tumour (n = 69; 52.7%), benign fibroblastic proliferation (n = 32; 24.4%), chronic granulomatous mastitis (n = 14; 10.7%), chronic suppurrate mastitis (n = 9; 6.9%), and in 7 cases, the result of the study was not available (n = 7; 5.3%). During the same period a total of 5589 TB cases were diagnosed at GGH, giving a frequency of mammary TB of 0.25%. Median age of patients with breast TB was similar to the women with other breast conditions; 12 out of 14 patients with breast TB (33.7, range: 20–52) was similar to the women with other breast conditions; 12 out of 14 patients with breast TB had axillary lymph nodes and/or pectoral lymph nodes; 11 of the patients had cough and 7 had loss of weight; 5 patients were treated in the TB clinic with the Directly Observed Treatment Short Course (DOTS) program and were cured. The other patients were transferred to TB clinics near their homes for treatment under the DOTS program.

A total of 23 testicular biopsies were referred for pathological study. The pathological diagnoses were: granulomatous orchitis (n = 8; 34.8%), chronic orchitis (n = 7; 30.4%), chronic hydrocele (n = 5; 21.7%), and neoplasms of testicle (n = 2; 8.7%). In one case, the result of the study was not available (4.3%). The frequency of testicular tuberculosis was 0.14% amongst all TB cases diagnosed during the period of study. The median age of patients with testicular TB was similar to those with other testicle pathologies. The median age of patients with breast TB (33.7, range: 20–52) was similar to the women with other breast conditions; 12 out of 14 patients with breast TB had axillary lymph nodes and/or pectoral lymph nodes; 11 of the patients had cough and 7 had loss of weight; 5 patients were treated in the TB clinic with the DOTS program and were cured. The other patients were transferred to TB clinics near their homes for treatment under the DOTS program.

A total of 23 oophorectomies were sent to the referral pathological department. The pathological diagnoses were: ovarian cyst (n = 11; 47.8%), ovarian malignancy (n = 5; 21.7%), other ovarian pathologies (n = 5; 21.7%), and adnexal tuberculosis (n = 2; 8.7%). The frequency of adnexal tuberculosis was 0.035 amongst all cases of TB diagnosed during the seven years of the study.

**Discussion**

Breast TB is an uncommon disease, even in countries where the incidence EPTB is high. Its clinical presentation is variable and non-specific, leading to a deferred diagnosis in the vast majority of cases [4]. Breast TB can mislead clinicians by its close resemblance to breast carcinoma or non-specific breast abscess [5]. While mammary TB is globally reported to account for less than 0.1% of all known breast diseases, it is reported to comprise up to 3% of treatable breast lesions in developing countries [5]. In this series of mammary conditions diagnosed by biopsy, around 10% of cases were TB mastitis. Mammary TB mainly occurs in women, especially during their reproductive years, but it can also occur in prepubescent and elderly women [6]. In our series, the median age was

| Table 1 – Number of biopsies performed, number of pathological diagnoses of tuberculosis (TB), rates of TB, and prevalence of TB in different samples. |
|---------------------------------|--------|--------|--------|
|                                | Breast | Testicle | Adnexal |
| Number of biopsies performed   | 131    | 23      | 23      |
| Number of pathological diagnoses of TB | 14 | 8 | 2 |
| Rate of TB                    | 10.7   | 34.8    | 8.7     |
| Age of patients in years, median (range) | 33.3 (14–80) | 42.9 (16–87) | 28.5 (23–70) |
| Prevalence of TB cases (95% CI) | 0.25   | 0.14    | 0.035   |
| Age of patients with TB in years, median (range) | 33.7 (20–52) | 42.1 (20–87) | 31.5 (31–32) |

a CI: confidence interval.
33.7 years (range: 20–52 years). The risk factors associated with mammary TB include: multiparity, lactation, trauma, past history of suppurative mastitis and AIDS [6]. Unfortunately, epidemiological data from the cases presented here were not available. Fine-needle aspiration cytology (FNAC) is an initial method for diagnosis of breast TB when both epithelioid cell granulomas and necrosis are present [4,6].

Genitourinary TB is the second most common site of involvement amongst EPTB in developed countries where mycobacterial culture and histological diagnosis of TB is possible [7,8]. In this TB series, testicular TB only represents 0.14% of cases. Moreover, granulomatous orchitis was the commonest diagnosis of masculine genital tissue biopsied and referred for pathological diagnosis. The usual site of involvement is the epididymis, which is usually hematogenously affected or, alternatively, by a retrocanalicular hematogenous pathway from an infected prostate [8]. The typical presentation mimics a testicular tumour with local lymphadenopathy [8]. Several authors have reported cases of testicular TB diagnosed by FNAC where histological diagnosis is not possible [7].

Adnexal TB is common in developing countries, and could be manifested as asymptomatic infertility, abdominal discomfort mimicking pelvic inflammatory disease or intestinal pathology, excessive menstrual loss and amenorrhoea, ascites and even pelvic masses similar to ovarian neoplasms [9,10]. In fact, it is frequent that the pathological diagnosis is established after programmed surgery for suspected ovarian cancer [9,10]. Only 8.7% of adnexal biopsies performed at GGH were pelvic TB. The FNAC in ovarian lesions has a high specificity for diagnosis of ovarian/adnexal lesions. Of 584 cases of FNAC performed on ovarian lesions in an Indian hospital, TB was diagnosed in 1.9% of them [10]. There is an alternative method to FNAC for suspected adnexal TB, which is ultrasound guided Tru-cut biopsy [11].

In conclusion, in developing countries TB cases affecting the breasts, testes and adnexal tissues may mimic other conditions, particularly neoplasms. Proper diagnosis is encouraged because the disease is curable with anti-TB drugs.

Conflict of interest

These authors confirm that there is no conflict of interest.

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