were determined as 100% for INH. Three isolates were contaminated so we did not include these in the final results.

Coban et al[8] evaluated blood agar as an alternative medium in drug susceptibility testing of 34 clinical isolates of *M. tuberculosis* to INH, RIF, ethambutol (ETM), and streptomycin (STR). They reported results of both methods were 91.1%, 97% and 100% agreement for INH, STR, RIF, and ETM. In addition, their results of the susceptibility test performed on blood agar were obtained on the 14th day of incubation for 22 isolates; the study showed that blood agar can be used as an alternative medium for the susceptibility testing of *M. tuberculosis*. In Coban's study, the agar proportion method was performed on sheep blood agar; however, in our study the agar proportion method was performed on both sheep and human blood agar, with a different methodology. In this study, we demonstrated that susceptibilities of *M. tuberculosis* were achieved within 6-8 days after inoculation of clinical isolates in both mediums. Since blood agar is not a selective medium, it may be more suitable for fastidious, slow-growing organisms. So, in our study we observed contamination on both mediums.

In conclusion, we showed that both agars used with the proportional method have similar diagnostic accuracy, however, with respect to cost, blood agar is more convenient than Middlebrook 7H10 agar and BACTEC 460.

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The role of fine needle aspiration cytology in the diagnosis of peripheral lymphadenopathy. *An institutional experience of 83 cases*

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Enlarged head and neck, and less commonly axillary, and inguinal lymph nodes are common clinical problems. It may be the result of a variety of different underlying diseases. History and physical examination alone are not always helpful in the evaluation of the underlying causes, so accurate tissue diagnosis is required. Lymph node fine needle aspiration cytology (FNAC) is valuable in solving the diagnostic problem of peripheral lymphadenopathy. It is a suitable alternative to the surgical excisional biopsy requiring general anesthesia. It is a simple, rapid, safe, and inexpensive technique, but its accuracy depends on the quality of the obtained specimen and on the experience of the cytologist. After complete history and physical examination, patients presenting to the surgical clinic of Dammam Central Hospital between 2002 and 2005 with peripheral lymphadenopathy, underwent FNAC. The aspirates were obtained using a 21-gauge needle with 20 ml disposable plastic syringe, smeared on at least 3 slides. The air-dried smears were stained with Diff-Quick or Giemsa, and the alcohol fixed smears with hematoxylin and eosin stain. No local anesthesia was required. Irrespective of the cytological diagnosis and after obtaining informed consent, all patients were subjected to excisional biopsy of the earlier aspirated enlarged lymph nodes under local or general anesthesia. The findings in the FNAC were correlated with the clinical data and the histological results to assess

the accuracy of FNAC in the diagnosis of peripheral lymphadenopathy.

Fine needle aspiration cytology was performed in 91 patients with peripheral lymphadenopathy. The age of patients ranged from 13-78 years with a median of 34 years. There were more females than males with a male-female ratio of 1:3. Inadequate specimens due to poor cellularity were obtained in 8 patients (8.8%), who were excluded from the study. The study was carried out on the remaining 83 patients. Most of the aspirated lymph nodes were from the head and neck in 67 patients (81%). Generalized, inguinal, and axillary lymphadenopathy was found in 9 (11%), 4 (4.5%) and 3 (3.5%) patients. Local anesthesia was used in 13 patients (15.6%). The most common definitive diagnosis was tuberculous lymphadenopathy in 31 patients, constituting 37.4%. Diagnosis of reactive hyperplasia, lymphoma, and metastatic malignancy was made in 30 (36%), 16 (19.3%) and 6 (7.3%) patients. Correct diagnosis obtained by FNAC was found in 62 patients, giving an overall diagnostic accuracy rate of 75%. As noticed from **Table 1**, 17 patients with tuberculosis, one with metastatic tumor, and 4 with lymphoma were diagnosed by FNAC as reactive hyperplasia. These 22 cases were considered as false negative cases. None of the patients with benign reactive hyperplasia on FNAC were subsequently found to have tuberculosis or malignant tumor. One or more of the triad of symptoms of fever, night sweating, and weight loss was found in 9 patients (30%) with reactive hyperplasia, 12 (39%) with tuberculosis, 6 (37.5%) with lymphoma, and one patient (17%) with metastatic tumor. No significant complications were encountered in all FNAC cases, but 2 patients developed wound infection after excision of cervical lymph nodes.

The utilization of lymph node fine needle aspiration (LNFNA) for diagnostic purposes dates from 1921. Subsequent studies showed that well performed LNFNA, in which the material obtained was properly handled and processed, offered a reliable, quick, safe, and cost-effective alternative to surgical excision with high diagnostic accuracy in peripheral lymphadenopathy.[1] However, certain limitations and pitfalls have to be appreciated and the clinicians and the cytopathologists must be aware of the diagnostic limitations of this method. Reports in the literature have highlighted the difficulties in distinguishing reactive hyperplasia from low-grade lymphoma, tuberculous lymphadenopathy, and metastatic malignancy. Lioe et al[2] found diagnostic difficulty in distinguishing low-grade malignant lymphoma from reactive hyperplasia in 163 fine needle aspirates. He related this difficulty to the fact that although a mixed population of lymphoid cells in an aspirate would point towards a reactive process; some cases of low grade non-Hodgkin's lymphoma (NHL) may contain occasional plasma cells, eosinophils, and even tingible body macrophages, especially if the nodal architecture is only partially effaced. Hodgkin's disease, particularly of the lymphocyte predominant subtype, could also prove exceedingly difficult to diagnose, as characteristic Reed-Sternberg cells may be very low in numbers amidst a polymorphous background. Lau et al[3] reported that FNAC examination had a sensitivity of 77% in the diagnosis of cervical tuberculous lymphadenitis and recommended the combined use of Mantoux test to increase the sensitivity of FNAC. Shaha et al[4] also stated that accurate cytological interpretation may be difficult in inflammatory disease of the lymph nodes. Lymphoma and metastatic undifferentiated carcinoma may be cytologically indistinguishable. Aspiration of necrotic material from the center of metastatic lymph nodes may give false-negative results. The benign hyperplastic lymph node may be difficult to distinguish from lymphoma. The overall diagnostic accuracy of 75% and sensitivity of 60% in our review is comparable to a number of published studies. As shown in many studies, the diagnostic accuracy of FNAC may be enhanced by several factors, including on-site cellular adequacy evaluation, special histochemical and immunochemical stains, in situ hybridization,

Table 1 - Comparison of cytological diagnosis of lymph node lesion with histological diagnosis.

Cytological diagnosis	Histological Diagnosis				
	Reactive	**Tuberculosis**	**Metastatic tumor**	**Lymphoma**	**Total**
Reactive	30	17	1	4	**52**
Tuberculosis		14			**14**
Metastatic			5		**5**
Lymphoma				12	**12**
Total	**30**	**31**	**6**	**16**	**83**

electron microscopy, and flow cytometry.[1] Also, the number of unsatisfactory smears of 8.8% is within the reported range in the literature.[2] The problem of false positivity, a worrisome aspect of FNAC is not reported in this study, as none of the smears with reactive hyperplasia were interpreted as tuberculous, lymphoma, or metastatic carcinoma. Our results in this series reported high rates of false negative in tuberculous lymphadenitis (55%), which is significantly higher than reported in the literature.[5] These were interpreted as reactive hyperplasia. This may be explained by the fact that tuberculous lymphadenitis frequently displays changes that are compatible with nonspecific reactive hyperplasia. Sometimes only a few epithelioid cells are found in small groups or as single cells, or the histiocytes may have the typical appearance of epithelioid cells. The pattern then approaches that of non-specific reactive lymphadenitis with prominent histiocytes. This may be the case particularly in toxoplasma lymphadenitis, and in early stages of sarcoidosis. Also, patients with necrotizing or pyogenic tuberculous lymphadenitis may not necessarily exhibit a picture of TB lymphadenitis, and could easily mimic other forms of necrotizing lymphadenitis (atypical mycobacteriosis, cat scratch disease, lymphogranuloma venereum, and so forth), and more seriously tumor necrosis.[6] It is therefore essentially required that a clinically suspected case is submitted also for bacteriological and culture study examination to improve the diagnostic accuracy. The constitutional symptoms of fever, night sweating, and weight loss were found in a third of patients with reactive hyperplasia, and in almost 40% of patients with tuberculous lymphadenitis and lymphoma. This finding suggests that clinical evaluation alone is not sufficient in differentiating the different causes of peripheral lymphadenopathy. Based on high specificity and low sensitivity of our results, we recommend surgical excision of the lymph nodes if the FNAC reported reactive hyperplasia. Although the routine use of ancillary studies such as flow cytometry, immunocytochemistry, in situ hybridization, and polymerase chain reaction may improve the diagnostic accuracy of FNAC, excisional biopsy, and immunohistochemical stains sometimes are required for subtyping of lymphoma. In contrast, if the FNAC showed tuberculous lymphadenitis, appropriate drugs therapy could be instituted and the patients spared unnecessary surgery. Ziehl-Neelsen stain and tuberculous culture are indicated, but a negative result does not exclude the diagnosis of tuberculosis.[4] If FNAC revealed metastatic carcinoma, a careful search is made to identify the primary tumor.

In conclusion, FNAC therefore proves to be a useful (screening) procedure by selecting out those patients who would require further assessment including surgical biopsy. However, due to its limitations, it does not totally replace surgical biopsy in the investigation of peripheral lymphadenopathy.

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A life-sustaining single dose of recombinant activated factor VII for an Egyptian patient with hemorrhagic crisis

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Bleeding is a well-known complication of anticoagulant treatment. The annual incidence of major hemorrhages with, for example, vitamin K antagonists has been reported to vary between 2-7%. This incidence is 2-3-fold higher for minor bleeds.[1] For a one-week course of intravenous heparin therapy, the major bleeding rate is approximately 1–3%.[1] When such a serious bleeding episode occurs, the use of a specific antidote is an option. There are 3 main types