study, the interval from PDR to definitive diagnosis of visceral artery aneurysms was 20.6±7.8 days (range, 10-30 days). However, only one patient in our series presented as fresh blood in the abdominal drains. Eighty percent (4/5) presented a diagnostic enigma, as the gastro-intestinal bleeding is the sole manifestation. Their definite diagnoses were obtained by angiography arranged following a negative pan-endoscopic examination for peptic ulcer.

Surgical exploration and identification of the bleeding vessels may be difficult and hazardous due to the surrounding of post-surgical tissue friability. Bowel adhesion and anatomic variation following PDR further complicated the treatment. Endovascular intervention thus became the preferred treatment option for aneurysms disclosed in the angiography for indeterminate gastrointestinal bleeding after PDR. Aneurysms of the hepatic artery were treated via total exclusion without vascular reconstruction. Collateral circulation is usually sufficient through the superior mesentery artery to the gastroduodenal artery. In cases of pancreatoduodenal and gastroduodenal artery aneurysms, hemostasis is often difficult due to multiple communicating vessels. Endovascular coil embolization during angiographic study is advantageous over surgery in easily identifying and obliterating all the feeding arteries to the aneurysm in cases with such anatomic restrictions. Prompt endovascular coil embolization achieved 80% short-term success in this series. The only hospital death was caused by profound hypovolemic shock prior to resuscitation. Two late deaths directly were attributed to infection, which reflected the immuno-compromised status of the patients. In addition, one survivor was proven with liver metastasis at 17th month follow-up. Although the long-term outcomes of visceral artery aneurysms following PDR are less favorable, the endovascular approach still provides adequate efficiency within their limited life expectancy.

In conclusion, successful treatment of visceral artery aneurysms following PDR requires a high index of suspicion, early diagnosis, and timely treatment. The endovascular intervention is feasible in such conditions. Clinical practitioners associated with pancreatic disease should be familiar with this scenario.

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## Isoniazid susceptibilities of *Mycobacterium tuberculosis* on blood agar

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Tuberculosis (TB) is an important public health problem in both developed and developing countries.[1] It is estimated that more than 8 million new cases of active TB occur annually and the global annual mortality is close to 2 million people. Mycobacterial cultures and susceptibility testing must be rapidly concluded for effective treatment and control of the disease. The 2 methods most commonly used for susceptibility testing of Mycobacterium tuberculosis (*M.tuberculosis*) include the proportion method performed on Lowenstein-Jensen medium (LJ) and Middlebrook 7H10-11 agar, and the BACTEC 460 TB system Becton Dickinson, sparks, MD, USA). The proportion method requires 3 weeks of incubation. The BACTEC 460 TB system uses a broth medium containing radio labeled palmitic acid substrate and results can be reported in 4-7 days, but it is labor-intensive, expensive, and generates radioactive waste.[2,3] The incidence of multidrug-resistant tuberculosis (MDR-TB), has increased in recent years. The MDR-TB, caused by strains resistant to at least isoniazid (INH) and rifampicin (RMP), is considered an emergent disease as well as the consequence of inadequate treatment. The World Health Organization has estimated that approximately 460,000 MDR-TB cases occur each year.[4] Early detection of MDR *M. tuberculosis* strains is important for control of tuberculosis. Drancourt et al[5]

investigated the effectiveness of blood agar for primary isolation of *M. tuberculosis*. They reported that *M. tuberculosis* can easily grow on blood agar in 1-2 weeks and that this medium has been routinely used instead of egg-based medium in the inoculation of 10,000 samples in a year for the diagnosis of tuberculosis, with the same results being obtained. The use of blood agar media for recovery of *M. tuberculosis* was reported early last century. A comparative study of different media conducted in 1977, suggested that penicillin blood agar would be at least as good as, if not better than, LJ medium for recovering *M. tuberculosis*. Blood agar is commonly preferred in many clinical microbiology laboratories as it is inexpensive and several bacteria are readily grown on it. In several studies, it has been reported that blood agar could be used for the isolation of *M. tuberculosis*.[5,6] In our study, we evaluated the performance of sheep blood agar and human blood agar for susceptibility testing of *M. tuberculosis* clinical isolates to INH by using the proportion method. The proportion method was used described by the National Committee for Clinical Laboratory Standards and blood agar was used instead of Middlebrook 7H10 agar.[7] Freshly grown colonies were transferred to a tube containing 3-4 ml of 7H9 broth and 4-5 sterile glass beads. The tubes were vigorously agitated on a vortex mixer, and then clumps were allowed to settle for 30-45 minutes. The supernatants were adjusted to equal densities of a number one McFarland standard with 7H9 broth and used as the standard inoculum for the proportion method. Each standard inoculum was diluted 100-fold with 7H9 broth. One hundred microliters of diluted inoculum was inoculated on blood agar medium with and without drugs. All plates were incubated at 37°C overnight, and then they were sealed, placed in plastic bags, and incubated at 37°C in 5-10% carbon dioxide. The study was performed in Mersin University Research Hospital Microbiology Laboratory, between April-June 2006.

In this study, 60 clinical isolates of *M. tuberculosis* were examined, and H37Rv were included as control strains. Drug susceptibility patterns of all isolates were previously detected by the BACTEC 460 TB system (Becton Dickinson, Sparks, MD, USA) and a standard protocol in accordance with the manufacturer's instructions was followed. In this study, 33 isolates of *M. tuberculosis* were susceptible to INH while 24 were resistant. The blood agar media image is shown in **Figure 1**. The study results are summarized in **Table 1** and all plates were evaluated at 6, 14, and 21 days according to the growth on the control well. Our results of the susceptibility test performed on blood agar (5% sheep and human) were obtained on the 6th day of incubation for isolates, the study showed that both blood agar can be used as an alternative medium for the susceptibility testing of *M. tuberculosis*. In our study, the plates were examined in the 6th, 14th, and 21st days of incubation. On the 6th day of incubation, colonies of 45 out of 60 isolates were visible macroscopically on blood agar, but the susceptibility testing results could not be evaluated. However, on the 14th day of incubation, all results were noted but incubation was prolonged to the 21st day. By the 21st day of incubation, we did not found any significant differences in susceptibility testing, but contamination was observed in 3 isolates (5%). The results were compared with the BACTEC 460 TB method as the reference, and the agreements

**Figure 1 -** The blood agar media image with susceptibility testing of *Mycobacterium tuberculosis.*

**Table 1 -** Comparison of the radiometric proportion method results with the results of blood agar.

| Isoniazid | Results on blood agar agreement | Results on blood agar human/sheep | Radiometric proportion method | Sensitivity % | Specificity % | PPV % | NPV % |
|---|---|---|---|---|---|---|---|
| Resistant | 100 | 24/24 | 24 | 100 | 100 | 100 | 100 |
| Susceptible | 95.2 | 33/33 | 36 | 92.3 | 100 | 100 | 88.8 |

PPV - Positive predictive value, NPV - Negative predictive value.

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