REX HEALTHCARE

Laboratory Bulletin. . .

Updates and Information from Rex Healthcare and Rex Outreach

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Blood Bank Moves to 100% Leukocyte Depletion

All blood products issued by Rex Hospital Blood Services are now leukocyte depleted. Leukocyte depletion of blood products is increasingly recognized as beneficial for patient recipients. Removing white blood cells from blood products reduces complications associated with patient response to white blood cell antigens and reduces the immune modulation effects of transfusions. Benefits include reduced febrile reactions, reduced alloimmunization, reduced postoperative infections, reduction in CMV transmission, and mitigation of the immunomodulating/immunosuppressive effects of transfusion.

All blood components collected at the Rex Blood Plan, including red blood cells and platelets, are now processed for pre-storage leukocyte depletion. All blood orders will be filled by these leukocyte depleted products whether specifically ordered as leukocyte depleted or not. While most of our inventory will be pre-storage leukocyte depleted and therefore not require a separate bedside leukocyte filter, some units we obtain from other blood centers that are not pre-storage depleted may require a bedside leukocyte filter. Such units will be automatically issued with the appropriate filter. Since these bedside filters slow the flow rate of the units, our plan is to issue only prestorage depleted products to the operating rooms and other acute care areas.

This trend in usage of 100% leukocyte depleted blood inventories is accelerating rapidly worldwide. Several European countries have moved to complete leukocyte depletion of all products. The Blood Products Advisory Committee for the U.S. Food and Drug Administration has recommended 100% leukocyte depletion as a goal for this country as well. The medical advantages of leukocyte depletion continue to become apparent, and the in-line filter/blood bag technology has evolved to the point that it is practical and cost effective to implement this policy. There are essentially no medical contraindications (with the exception noted below) or disadvantages to using leukocyte depleted products and patient care will only be improved. The one exception is for patients who will undergo kidney transplant. In this select group, there is an advantage to receiving white cell containing red cell transfusions prior to the transplant as this decreases subsequent rejection and improves outcome. In this clinical setting, the Medical Director can arrange for non-leukocyte depleted products by request.

Donated units of blood will no longer be screened for CMV since leukocyte depleted products have been found to be equivalent or better than CMV seronegative units for prevention of CMV transmission.

It is important to remember that prestorage leukocyte depletion does not eliminate the risk of graft versus host disease (GVHD). Therefore, any patients requiring blood product irradiation to reduce the chance of GVHD will still require irradiation of the leukocyte depleted units. The need for this extra step will still require communication to Blood Services by a physician order.

Timothy R. Carter, MD
Medical Director Blood Services

THYROID

At any given time, between four and seven percent of the adult population in the

FINE NEEDLE ASPIRATION BIOPSY

United States has a clinically palpable enlargement of the thyroid gland (goiter). Before the advent of Fine Needle Aspiration Biopsy(FNA) to evaluate thyroid nodules, the diagnostic armamentarium included only physical examination, thyroid function tests, and radionuclide scanning. When thyroid enlargements were evaluated only by these conventional studies, less than 25 % of surgically excised thyroid nodules were found to be malignant. Today thyroid FNA is the most sensitive, specific and cost-effective test available for the diagnosis of thyroid malignancy. In most large studies a positive thyroid FNA will yield a neoplastic process at surgery at least 90% of the time while approximately 1% of individuals with a negative FNA will have a thyroid malignancy. The overall sensitivity of thyroid FNA averages 83% with an overall specificity of 92%.

At Rex Healthcare we have been evaluating thyroid FNA's for a number of years and have recently studied our collective experience over the past five years (1993 through 1997). During that period the Rex pathologists examined nearly one thousand thyroid FNA cases. The majority of these FNA's were performed by endocrinologists, with lesser numbers performed by ENT surgeons and a few performed by general surgeons. 175 of these patients ultimately had thyroid surgery at Rex. A direct Thyroid FNA to surgical excision correlation study was performed using these 175 cases. In 43 of the 175 cases the FNA prior to surgery was "insufficient for diagnosis" (24%). The sensitivity for neoplasia in the remaining FNA's was 92% with a specificity of 96%. Final surgical pathologic diagnoses included 48 papillary carcinomas, 7 follicular carcinomas, 2 medullary carcinomas, and 30 follicular adenomas.

Thyroid FNA's classified as "insufficient for diagnosis" fall into one of two categories: those that are truly too hypocellular for diagnosis and those that probably represent colloid nodules (benign nodular goiters) but have too few follicular cells present to meet the criteria for adequacy. The minimum criteria for an adequate thyroid FNA is the presence of at least 6 groups of at least 10 follicular cells on at least 2 slides. Many cases of colloid nodules, especially those with degenerative changes, will contain abundant colloid and hemosiderin-laden macrophages but will have relatively few follicular cells. In all insufficient cases we enumerate these elements in the microscopic description so that information is available for the clinician to decide whether the specimen might be representative of the patient's condition (benign nodular goiter) or that the specimen is indeed insufficient for diagnosis. Malignancy is present in less than 1% of cases when the FNA contains colloid material and histiocytes but is insufficient due to a paucity a follicular cells. The prevalence of malignancy is significantly higher if the FNA is acellular or contains no thyroid elements.

In our experience, false positive thyroid FNA's are most often seen in either Hashimoto's thyroiditis or hyperplastic colloid nodules. In Hashimoto's thyroiditis the spectrum of changes induced by the process can sometimes lead to an FNA impression of follicular neoplasm, lymphoma, or even papillary carcinoma. In cases where Hashimoto's thyroiditis is suspected clinically or when laboratory data suggestive of the process is available, such information is invaluable to the pathologist interpreting the FNA.

False negative thyroid FNA's occur most often with hypocellular specimens when a diagnosis is rendered on material that is of borderline adequacy.

Overall our experience with thyroid FNA's has been quite positive. We welcome any suggestions as to ways to improve the process of evaluating and reporting these, or other, types of cytologic specimens. For more information please contact Dr. Keith Nance at 784-3286 or the Rex Cytology Department at 784-3050.

Keith V. Nance, M.D.

Rotavirus testing ... Gastric urease results ...

Starting in January, 1999, Rex will begin testing stools for Rotavirus. By bringing this test in house, Rex will lower the cost and will decrease the turn around time. If there are any questions, please contact personnel in the Core Lab at ext 3040.

Also, starting in January, Rex will no longer telephone gastric urease results from endoscopic biopsies. These results, indicative of Helicobacter pylori infection, are not considered to be an emergency. Written reports will be issued within 24-48 hours.

Karl T. Kleeman, PhD

HCV Lookback Underway

Rex Blood Services is participating in a nationwide implementation of the Hepatitis C Virus (HCV) lookback program. After much discussion and debate, participants from the US Food and Drug Administration, Centers for Disease Control and blood industry representatives including the American Association of Blood Banks developed a plan for HCV lookback. Recipients of blood products collected since January 1, 1988, which were anti-HCV negative or untested at the time of transfusion, will be notified when those donors subsequently test reactive for anti-HCV in a licensed multiantigen screening test and reactive in a licensed or investigational HCV supplemental test. The goal is to inform such recipients that they have been transfused with units potentially contaminated by the Hepatitis C Virus and to provide appropriate counsel.

Blood centers and transfusion services are required to notify the patient's physician of record or the physician who ordered the blood, so the physician can subsequently notify and counsel the patient. Rex Blood Services has sent out this physician notification along with informational packets instructing the physician of appropriate steps to take, and educational material for the patients to help them understand the implications of the notification. If the physician of record is no longer available, Blood Services is directly contacting the patients.

The discovery of HCV was first reported in 1989, and the first blood test (first generation) for HCV became available in May 1990, which identified most, but not all, blood donors infected with HCV. Improved (second generation) blood tests were begun at Rex in March 1992, and nationally in July 1992. Even donors transfused after 1992 may still be in the group notified since a small number of donors who tested negative for HCV with second generation tests were in a very early stage of infection that the test could not detect.

Patients notified through lookback are provided with the following information:

> Hepatitis C is a liver disease caused by infection with the hepatitis C virus (HCV), which is found in the blood of persons who have this disease. If you test positive for hepatitis C, it is very likely that you have chronic (long term) liver disease. You will need to see a doctor to determine: (1) if you have liver disease and how severe it is, (2) if you should be treated for your liver disease, (3) how you can protect your liver from further harm, and (4) how you can prevent spreading HCV to others. Many people who have hepatitis C have no symptoms and feel well. For some people, the most common symptom is extreme tiredness. The only way to tell if you have been infected with HCV is to have a blood test. About 4 million Americans are infected with HCV and most don't know it. Whether you feel sick or not, you should have a blood test for hepatitis C. Hepatitis C is serious for some people, but not for others. Most people who get hepatitis C carry the virus for the rest of their lives. Most of these individuals have some liver damage but many do not feel sick from the disease. Some people with liver damage due to hepatitis C may develop cirrhosis (scarring) of the liver and liver failure which may take many years to develop. Others have no long term effects. If you have hepatitis C you should

protect your liver by: (1) not drinking alcohol, (2) not taking any medicines, including over-the-counter and herbal medicines, without checking with your doctor, and (3) getting vaccinated against hepatitis A. Antiviral medicines are approved for the treatment of persons with chronic hepatitis C. Treatment is effective in about 2-3 out of every 10 persons treated. You should check with your doctor to see if treatment would help you. Others at risk of getting hepatitis C are persons who ever injected street drugs, healthcare workers exposed to blood in the workplace, and babies born to infected mothers. HCV can also be spread by sex, but this does not occur very often. If you have hepatitis C you can prevent spreading HCV to others by not donating blood, body organs, other tissue, or sperm, not sharing toothbrushes, razors, or other personal care articles that might have blood on them, and by covering cuts or sores on the skin. If you have one steady sex partner, there is a very low chance of giving hepatitis C to that partner through sexual activity. If you want to lower the small chance of spreading HCV to your partner, consider using latex condoms. Ask your doctor about having your sex partner tested.

In addition to this retrospective HCV lookback notification effort identifying eligible recipients from 1988 to present, we will continue this process on an individual basis if any donors test reactive for HCV in the future. If there are any questions about the HCV lookback program or blood donor/blood recipient issues, please contact Dr. Tim Carter, or any of the Rex pathologists, and we would be happy to provide additional information.

Timothy R. Carter, MD
Medical Director Blood Service

Prostate Specific Antigen (Method Change)

Effective 12/30/98, the method used for prostate specific antigen has been modified. The assay still employs the Hybritech™ (Beckman™) monoclonal antibody, but the method has been modified to a paramagnetic particle chemiluminescent immunoassay allowing it to be analyzed on a random access automated instrument. (Translation: operational efficiency will improve.) A prospective study of 40 patient samples at Rex showed a 99% correlation with the previous method and an acceptable degree of precision (run-to-run coefficient of variation = 4.2%). The detection limit and reference range remain 0.1 ng/mL and 0.0 - 4.00 ng/mL respectively.

John D. Benson, MD
Deborah H. Brown, MT(ASCP)

For further information, call the Laboratory (784-3040). Telephone extensions are: Pathologists' Direct Line (3201), Dr. Kleeman (3063), Sharon Logue (Lab Director 2400), Robin Ivosic (Core Lab Manager 3053), Clark Zervos (Blood Services Manager 785-4770), Rex Outreach (784-3040), Karen Sanderson (Customer Service Manager 3396).