REX HEALTHCARE

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Updates and Information from Rex Healthcare and Rex Outreach

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Cary Outreach Laboratory

For the convenience of physician offices and patients in the Cary, Apex and Fuquay-Varina areas, a Rex Outreach Laboratory has been established in Cary Medical Park (204 Ashville Avenue, Suite 50; behind O'Charley's). The laboratory provides full phlebotomy services for specimens referred to Rex. Stat testing for electrolytes, glucose, BUN, creatinine, CBC, urinalysis, pregnancy, infectious mononucleosis, and group A streptococcal pharyngitis is available on site. There is no waiting and your patients can park their minivans right outside our door. We are open from 8:30 AM - 5:00 PM, Monday - Friday. Physician orders may be called to 851-7563, faxed to 851-2126, or written on a Rex Outreach requisition. (Remember to list the diagnosis.) For more information or directions call 851-7563.

Becky Preusse, MLT
John D. Benson, M.D.

Cytogenetic analysis of Stillbirths/ IUFD/Placenta/ Spontaneous Abortions

Rex Healthcare Laboratory utilizes the cytogenetics laboratory at UNC Hospitals as a reference laboratory for all karyotyping of blood and tissues. Their close proximity allows for good preservation of transported samples. Cytogenetic analysis of products of conception including aborted tissues, placentas, and fetuses is fraught with difficulties related to bacterial contamination, lack of viable tissue, and contamination of the sample by maternal tissues. In general, the ideal specimen, if placental tissue is available, is chorion (amnion is also likely to be viable but is more likely to be contaminated with bacteria). From aborted tissues, chorionic villi with minimal amounts of maternal tissues such as endometrium or decidua is the preferred sample. From stillbirths or IUFD cases, samples of deep tissue are preferred as they are more likely to be viable (pericardium is the sample of choice). Please note that a signed permission for autopsy is necessary for any postmortem study performed on a fetus of 20 weeks gestation or greater. In all cases the samples should be obtained using sterile technique to reduce microbial contamination. **Tissues submitted to the laboratory for cytogenetic analysis should not be placed in formalin but should be sent to the laboratory fresh and as soon as possible**. In all cases the Histology laboratory should be notified immediately upon the arrival of such a specimen. On weekends or after hours, contact the pathologist on call.

Keith V. Nance, M.D.

Diarrhea caused by

Enteric infection caused by *E. coli* can be due to at least 5 different

"pathogenic" *E. coli*

varieties of "pathogenic" *E. coli*.

ETEC (enterotoxigenic) and EAEC (enteroadherent) are important causes of traveler's diarrhea. Other than traveler's diarrhea which can be treated empirically, ETEC/EAEC are not common and routine identification in sporadic cases is not recommended.[1]

Antimicrobial prophylaxis has been effective for traveler's diarrhea. Because of increasing drug resistance and the possibility of side effects, many authorities are recommending that travelers avoid antimicrobial prophylaxis and instead, use care in their consumption of food and water. If severe disease occurs, fluid and electrolyte replacement is important and all that is generally needed. Antibiotics may be employed to shorten the duration of the disease.[1]

EPEC (enteropathogenic) are an important cause of childhood diarrhea. Most authorities do not recommend investigation for EPEC serotypes in sporadic cases of diarrhea.

EIEC (enteroinvasive) cause a disease that is similar to Shigella-like dysentery. While epidemics of diarrhea may be investigated for evidence of EIEC infection, the lack of a simple procedure for the detection of invasiveness has made it impractical to screen stools for this agent in sporadic cases.

EHEC/VTEC (enterohemorrhagic, verotoxic) cause hemorrhagic colitis and have been associated with the hemolytic-uremic syndrome (HUS) in children. The most common serotype is *E. coli 0157:H7*. HUS is defined by the triad of acute renal failure, thrombocytopenia, and microangiopathic hemolytic anemia. These features typically occur about a week after the onset of a nonfebrile, bloody diarrhea.[1]

Rex Laboratory offers a screening test for *E. coli 0157*. This must be ordered in the HIS computer as EC0157. It has been suggested that this should be ordered on all bloody stools and in cases where there is any history that leads one to suspect a possible *E. coli 0157* infection.

E. coli 0157 is the most common "pathogenic" *E. coli* resulting in community acquired diarrhea. The laboratory will perform the *E. coli 0157* screen whenever a "pathogenic" *E. coli* evaluation is ordered on stool. However, if the patient is part of an outbreak or cluster of diarrhea cases, please consult Dr. Kleeman or a pathologist to discuss specialized testing for other "pathogenic" *E. coli*.

[1] *Principles and Practice of Infectious Diseases*, Mandell, Bennett and Dolin, 1995.

Karl T. Kleeman, Ph.D.

Revision of expected (normal)

Effective September 9, 1996, the Laboratory will adjust the reference (normal) range of values for serum Magnesium to: 1.5 to 2.1 mg./dL. This represents a decrease of 0.3 mg/dL from the manufacturer's

values for Serum Magnesium

recommended range that was used previously. This change is based on values obtained on several local populations.

Clinical manifestations of frank magnesium deficiency (less than 1.0 mg/dL) include impairment of neuromuscular function such as hyperirritability, tetany, convulsions and electrocardiographic changes. High magnesium levels reduce muscle and nerve irritability. Decreased magnesium levels may occur in prolonged intravenous feeding (unless supplemented with magnesium), acute alcohol intoxication, primary hyperaldosteronism, malabsorption syndromes, diabetic coma, hyperparathyroidism and alcoholic cirrhosis. There are suggestions in the literature that borderline low magnesium levels may lead to an increased risk of cardiovascular damage including hypertension, cerebrovascular and coronary constriction. There are also occasional literature suggestions that low magnesium levels may play a role is some forms of migraine headaches. Increased magnesium levels may be found in renal failure.

Robert B. Brainard, Ph.D.
Debbie Brown, MT(ASCP)
Elaine Patterson, MT(ASCP)

"Not tonight dear, I've got an important test tomorrow" (effect of ejaculation and exercise on PSA)

Prostate specific antigen (PSA) is a popular blood test for diagnosing and monitoring men with prostate cancer. The usefulness of this tumor marker is enhanced by knowledge of physiologic factors affecting the blood level. Several recent papers have reported conflicting results regarding the effect of ejaculation on serum PSA levels. Simak et al reported 18 patients between 20 and 39 years old in whom PSA levels were measured 1 and 7 days after ejaculation.[1] In 13 patients, there were statistically significant decreases in serum PSA levels. Glenski et al studied 100 healthy men (age range, 20-29 years) and reported no significant effect in PSA following ejaculation.[2] One criticism of these papers is the study population is much younger than the population most commonly tested for PSA. Tchetgen et al investigated the effect of ejaculation on 64 men (age range 49-79 years) by measuring PSA before ejaculation and 1 hour, 6 hours, 24 hours, and 48 hours after ejaculation.[3] In 87% of the men, PSA increased following ejaculation. In 6 of the men (10%), this resulted in a PSA value which normally would have resulted in ultrasound directed biopsy. The largest PSA increase was observed 1 hour after ejaculation (mean 0.8 ng/mL, standard deviation +/- 1.32 ng/mL, range -0.1 to 9.2 ng/mL), but statistically significant differences were observed at 6, 24, and 48 hours as well. The increase in PSA correlated directly with patient age and baseline PSA value. By 48 hours, 97% of the population had PSA values comparable to their initial baseline PSA. The authors recommended men abstain from ejaculation for 48 hours prior to PSA testing.[3]

The effect of exercise on PSA levels was studied by Oremek and Seiffert.[4] They measured serum PSA values before and after 15 minutes of vigorous exercise on a bicycle ergometer in 301clinically healthy male outpatients. The age range of the population was not specifically stated, but included

men younger than 25 and older than 75. PSA levels increased by as much as threefold over the baseline values. Again this increase correlated directly with patient age and the baseline PSA value. The authors suggested "extensive physical activity" be avoided before blood is collected for PSA determination.

Conclusion: Although not conclusive, these studies suggest it might be prudent for patients to abstain from ejaculation or strenuous physical activity for 48 hours prior to diagnostic PSA testing to avoid possible confusion and reduce the need for repeat testing.

References:

[1] Simak R et al. *The Impact of Ejaculation on Serum Prostate Specific Antigen*. J Urol 150:895, 1993.

[2] Glenski WJ et al. *Prostate Specific Antigen: Establishment of the Reference Range for the Clinically Normal Prostate Gland and the Effect of Digital Rectal Examination, Ejaculation and Time on Serum Concentrations*. Prostate 21:99, 1992.

[3] Tchetgen MD et al. *Ejaculation Increases the Serum Prostate-Specific Antigen Concentration*. Urology 47:511, 1996.

[4] Oremek GM & Seiffert UB. *Physical Activity Releases Prostate-Specific Antigen (PSA) from the Prostate Gland into the Blood and Increases Serum PSA Concentrations*. Clin Chem 42:691, 1996.

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