

Fitzgerald Health Education Associates, Inc. Newsletter
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Fitzgerald Health Education Associates, Inc. is an NP-owned company dedicated to helping nurse practitioners, advanced practice and ambulatory care nurses achieve certification through review courses and to maintain professional competence by providing live continuing education seminars, web and computer based learning courses, audio/video learning modules and books. The Fitzgerald Nurse Practitioner Certification Exam and Practice Preparation Course has helped over 25,000 NPs nationwide achieve certification and improve their clinical assessment skills since its inception in 1988.

NEW TO THIS NEWSLETTER

CE Test! Read the articles contained in this newsletter, register on-line to take the test (passing score is 80%) and earn 1.0 Approved Contact Hours! On-line testing allows you to get your results immediately & print your certificate directly from your computer. The registration fee for a FHEA newsletter test is \$10. For details go to: <http://stores.yahoo.com/fhea/onteforfhmoe.html>

Objectives for this month's CE articles.

After reading this newsletter, the nurse practitioner should be able to:

1. Evaluate the clinical significance of select elevated hepatic enzymes.
2. Identify the vitamin D requirements of exclusively breast fed infants.
3. Describe the benefits of NP-directed care in heart failure patients.

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FHEA Offer of the Month

September's Special: 10% Discount off of Expert Exam: Abdomen video. For more information go to: <http://stores.yahoo.com/fhea/index.htm>

Evaluating Hepatic Enzymes: A focus on AST and ALT

By Margaret A. Fitzgerald, MS, APRN, BC, NP-C, FAANP

President, Fitzgerald Health Education Associates, Inc.

FNP, Adjunct Faculty, Family Practice Residency, Greater Lawrence (MA) Family Health Center

Laboratory assessment of liver enzymes is an important part of the evaluation of a person with or at risk for liver disease. Liver enzymes are part of a panel of tests often referred to as liver function test (LFT). However, since these substances are leaked into circulation in response to damage to the hepatic cell, the evaluation of liver enzymes is actually a test of the degree of hepatic inflammation or damage rather than liver function.

Hepatic enzymes are normally found in circulation in small amounts because of hepatic growth and repair. Two of the most commonly ordered hepatic enzyme tests are aspartate aminotransferase (AST, formerly known as SGOT) and alanine aminotransferase (ALT or SGPT). AST has a circulatory half-life of approximately 12 to 24 hours; therefore, levels rise in response to hepatic damage and clear quickly after damage ceases. The AST level increases in response to hepatocyte injury, as may occur in alcohol abuse, the therapeutic use of HMG-CoA reductase inhibitors (lipid-lowering drugs whose names have the “-statin” suffix, such as lovastatin and atorvastatin), and acetaminophen overdose. This enzyme is also found in skeletal muscle, myocardium, brain, and kidneys in smaller amounts, and so damage to these areas may also cause an AST rise. AST elevation is generally found in only about 10% of problem drinkers. When AST level is elevated with normal ALT level, coupled with mild macrocytosis (MCV > 100 fL, seen in about 30% to 60% of men who drink five or more drinks per day and in women at a threshold of three or more drinks per day), long-standing alcohol abuse is the likely cause.

ALT is more specific to the liver, having limited concentration in other organs. This enzyme has a longer half-life than AST, at 37 to 57 hours. Therefore, elevation of ALT levels persists longer after hepatic damage has ceased. This enzyme’s greatest elevation is likely seen in hepatitis caused by a hepatic-specific virus as seen in hepatitis A, B, C, or D. This enzyme is less likely to increase in the presence of alcohol abuse than AST. When evaluating a patient with suspected substance abuse causing hepatic dysfunction, the NP must note both the degree of AST or ALT elevation and the AST/ALT ratio.

General rules on the cause of the hepatic inflammation are as follows.

AST/ALT rise in selected prescription drugs including the statins and alcohol abuse

* AST < 300 U/L (typically <150 U/L); ALT < 100 U/L; AST/ALT ratio >1

* Clinical example: A 62 year-old man who drinks 5-6 beers per day

* AST =55 U/L; ALT=28 U/L; AST/ALT ratio >1

One way to remember this is that AST can rise in response to the use of:

A= Alcohol; **S**= Statin; **T**= Tylenol

That said, less than 1% of patients taking a statin will have a clinically significant elevation in AST.

AST/ALT rise in viral hepatitis (A, B, C, D, E) (Norms: AST, 0 to 31 U/L; ALT, 0 to 31 U/L)

* AST > 100 U/L; ALT > 300 U/L (ALT/AST ratio > 1)

* Clinical example: A 45 year-old woman with acute hepatitis A

* AST, 660 U/L; ALT, 1105 U/L; ALT/AST ratio > 1

One way to remember this is that ALT can rise in response to the use of certain medications, ingestion of select toxins and liver infection.

A= Actos (pioglitazone), Avandia (rosiglitazone); L= Liver infection; T= Toxins and therapeutic agents

As with the statins, hepatic enzyme elevation in response to the use of pioglitazone or rosiglitazone is infrequent. As a result, recommendations for hepatic enzyme monitoring with the glitazones have been changed. Formerly, hepatic enzyme testing was recommended at baseline and as frequently as every 2 months during the first year of use. This recommendation arose from experience with troglitazone (Rezulin), a thiazolidinedione (TZD) with a rate of hepatic enzyme elevation in users at around 2%. Troglitazone was withdrawn from the US market due to this problem and the availability of TZDs, pioglitazone (Actos) and rosiglitazone (Avandia). With the use of the currently available TZDs, the observed rate of hepatic enzyme elevation is well below 1%. As a result, the new schedule recommends testing hepatic enzymes prior to starting therapy and periodically thereafter at an interval that is not defined.

REFERENCES

Desai, S. (2004) Clinician's Guide to Laboratory Diagnosis. Hudson, OH: LexiComp, available at www.fhea.com

Fitzgerald, M. (2005, in press) Abdomen chapter. Study Guide for Nurse Practitioner Certification and Practice Preparation. Philadelphia: F. A. Davis.

Prescribers Letter, September 2004, available at <http://stores.yahoo.com/fhea/preslet.html>

Additional information available through Fitzgerald Health Education Associates, Inc.

<http://stores.yahoo.com/fhea/honlabdatski.html> and

<http://stores.yahoo.com/fhea/labascasapto.html>

New Clinical Workshops and Pharmacology Update Programs

* Philadelphia, PA - September 9 - Suturing Class (Basic only)

* Los Angeles, CA - September 10 - Suturing Classes (Basic & Advanced)

* North Andover, MA - September 13 - Suturing Classes (Basic & Advanced)

* North Andover, MA - September 14 - Acute Care CE Seminar

* Boston, MA - October 1 - Pharmacology Update

* Boston, MA - October 2-3 - Clinical Skills Workshop Seminar

All 2004 dates are now posted! First quarter of 2005 dates are posted! For more information, go to: <http://www.fhea.com/live.htm>

Clinical Update Cruises!

- * Western Mediterranean Cruise - October 9-16, 2004
- * Western Caribbean Cruise - Pre-Holiday - December 11-18, 2004
- * Hawaiian Cruise – January 23-30, 2005
- * Eastern Caribbean Cruise - March 12-19, 2005

For more information, go to: <http://www.fhea.com/cruises.htm>. Exciting New Information on the Hawaiian Cruise January 23-30, 2005, go to: <http://www.fhea.com/Hawaiiancruise012305.htm>

Do Exclusively Breastfed Infants Need Vitamin D Supplementation?
 by Marie L. Bosco, BSN, RNC, IBCLC
 Private Practice Lactation Consultant, MI

If breastmilk is indeed the most optimal and adequate form of nutrition for infants, why is it deficient of vitamin D? Breastmilk contains a vitamin D concentration of 25 IU/L or less, in contrast to the American Academy of Pediatrics (AAP) recommendation a minimum of 200 IU/L. Why the difference? The AAP's recommendation was developed in 2002 in response to the rising cases of rickets, caused by severe vitamin D deficiency. Rickets may cause bone deformities, which can alter normal development milestones (i.e. crawling, walking).

So why it is that infants require more of this vitamin than breastmilk can offer? The answer is quite simple if we take time to examine it. First, the AAP recommends that infants younger than 6 months not be in direct sunlight. Sunlight is a natural source of vitamin D to the body. Second, if children or adults are in the sun a sunscreen or preferably a sun block should be applied. This also interferes with vitamin D uptake in the body. Another factor that affects absorption of this vitamin is skin pigmentation. Dark skin coupled with lack of exposure to direct sunlight again increases the risk of deficiency and rickets. The solution to this rising disease has been clearly outlined by the AAP. All newborns should receive at least 200 IU/L per day of Vitamin D. If the infant is exclusively breastfed this means an over-the-counter supplement. All breastfed infants receiving at least 500 ml of vitamin D fortified formula or cow's milk do not need this supplement. Furthermore, all formula fed infants who are receiving less than 500 ml of vitamin D fortified formula or cow's milk should be supplemented. Finally, all children and adolescents who do not get regular sunlight exposure, do not drink at least 500 ml of fortified milk, or do not take a daily multivitamin should also be supplemented with 200 IU of vitamin D. Promoting this vitamin D supplementation guideline does not make breastmilk inferior or inadequate; it is changes in society and knowledge of sun exposure that cause this to be necessary. Preventions of rickets and its sequelae while protecting our children from the risks of long-term sun exposure far outweigh any thoughts regarding use of vitamins supplementation. It only makes sense to do that which will protect us.

REFERENCE

Prevention of Rickets and Vitamin D Deficiency: New Guidelines for Vitamin D Intake, Pediatrics, Vol 1211, No.4, April 2003, PP908-910.

Margaret A. Fitzgerald's upcoming speaking engagements

9/9 - 9/10/04 - 16th Annual Texas Nurse Practitioners Conference, Austin, TX. Presenting two topics, New Drug Update and challenging Case Studies in Lab Diagnosis. Info: 817-272-5371, e-mail: jjenkins@uta.edu or web site: <http://www.texasnp.org>

9/11/04 - Heartland Advanced Practice Nurses Network Primary Care Conference, Cape Girardeau, MO. Presenting full day on abdominal pain, pediatric asthma, metabolic syndrome and new drug update. Info: Cheri Huckstep Reed at: cherifnp@sbcglobal.net.

9/22 - 23/04 - VA Pittsburgh Healthcare System Pharmacology Update for Advanced Practice Nurses, Pittsburgh, PA. Two-day program including, New Drug Update, Antimicrobials, Cardiovascular Disease, Diabetes, Women's Health, Neurological Drug Update and Mental Health Medications. Info: Emily Klaczak, 412-365-5723.

9/24 - 25/04 - United Advanced Practice Registered Nurses of Georgia, Central GA Chapter, 2nd Annual Conference: The Patient: The Law: The Practice, Macon, GA. Presenting the Keynote talk: Now What? Where You and Your NP Profession are Going, and two clinical topics on Respiratory Infections and Hot Topics in Drug Therapy. Info: Jane Giddens at: janegiddensnp@bellsouth.net.

9/29 - 30/04 - NPACE Midwest National Advanced Practice Conference, Chicago, IL. Presenting three topics, Interpreting LFTs, Antimicrobial Therapy and Now What? Where You and Your NP Profession are Going. Info: npace@npace.org.

If you are interested in having Margaret or one of our other talented associates speak at your school, local, regional or national conference, please mail tricia@fhea.com for more information. Conference administrative services are also available.

Specialized Care by APNs Improves Health of Elderly with Heart Failure, Cuts Costs

A new study funded by the National Institute of Nursing Research shows that when elderly heart-failure patients receive specialized nursing care throughout their hospital stay and at home following hospital discharge, the patients have a better quality of life and have fewer hospital readmissions (NINR, May 13, 2004). Instead of costing more money for this specialized care, the study showed that the care resulted in a nearly 38% savings in Medicare costs.

The study appears in the May 2004 issue of the "Journal of American Geriatrics Society" and was conducted by researchers at the University of Pennsylvania, led by Professor of Nursing Mary Naylor, PhD, RN.

Six Philadelphia academic and community hospitals participated in the study, with advanced practice nurses coordinating the care provided by the patients' physicians, pharmacists, social workers, RNs, and other health team members for high risk older adults throughout an episode of acute illness.

The study found that while the total costs of providing this level of care for patients in the APN group was nearly double that provided to patients receiving routine care, this increase was more than offset by cost savings from fewer hospital readmissions. The higher level of care actually saves taxpayers an average of \$4,845 per patient, the researchers found - a 37.6 percent savings over 12 months.

For more information, go to NINRs website at <http://ninr.nih.gov/ninr>

Opportunities for NPs to Expand Scope of Practice

* Massachusetts General Hospital Chaplains Program is offering a unique training opportunity at MGH: The Kenneth B. Schwartz Fellowships in Pastoral Care. This training is for clinicians who wish to learn to integrate spiritual assessment and care giving skills into the practice of their own disciplines. For more information contact Rev. Mary Martha Thiel regarding the CPE program at 617-726-2220

* Applications for 2005 Building Academic Geriatric Nursing Capacity Scholars Program: The American Academy of Nursing is pleased to announce the call for applications for the 2005 John A. Hartford Foundation funded Building Academic Geriatric Nursing Capacity Scholarship Award. Applications are due January 15, 2005. To learn more about this program and download an application, go to <http://www.geriatricnursing.org/applications>

***Expand your practice skills by attending Clinical Skills workshop seminars offered by FHEA:

Suturing classes - for schedule <http://www.fhea.com/Suturing%20workshops%202004.htm>

Clinical skills, such as Cardiac exam, ECG Interpretation, Eye exam, Abdomen exam, common office procedures, common dermatologic procedures and suturing, go to:

<http://www.fhea.com/skills%20workshops.htm> for schedule and registration information.

Open Forum

FHEA welcomes comments and ideas from its readers! Please mail june@fhea.com

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We have sent this e-mail newsletter in the hope that you will find it useful. If you prefer not to receive future issues, please e-mail: stopnews@fhea.com. Please include "Stop" as the subject of your e-mail and your full name and the mail address you wish to cancel in the body.

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