

November
2001

Volume 4
Issue 11

HCV Advocate

A monthly newsletter of the Hepatitis C Support Project
www.hcvadvocate.org

Study Suggests That Treatment of Acute HCV Can Eliminate Virus

New study points out the need for increased testing and counseling

By Alan Franciscus
Editor-in-Chief

In a new study that will be reported in the November 15 2001 issue of the New England Journal of Medicine, a research team led by Dr. Elmar Jaeckel of the Hannover Medical University of Hanover, Germany studied 44 patients (between 18 to 65 years old) from 24 medical centers who contracted HCV to study the effectiveness of treating newly acquired HCV infection with interferon monotherapy.

The selection criteria for this trial required participants to be HCV RNA positive to a polymerase-chain-reaction (PCR) assay and have elevated serum alanine aminotransferase levels (ALT's) of more than 350 (20 times the upper limit of the normal range). The source of exposure to HCV was determined to be injection drug use (9 people), needle-stick injury (14), medical procedure (7), sexual contact (10), and unknown or unclear source (4). The distribution by genotype was 1 (27 people), genotype 2 or 3 (12), genotype 4 (0) and unknown genotype (5).

All subjects were treated with 5 MU of interferon alfa-2b (Intron A) for the first four weeks, followed by 5 MU three times a week for another 20 weeks. Forty-three patients completed the study. Intent to treat results reported that 95% of patients cleared the hepatitis C virus (42 patients out of 44 patients - one patient dropped out at 12 weeks due to adverse events).

On treatment (patients that completed therapy) results reported 98% of patients cleared the hepatitis C virus (42 patients out of 43 patients that completed the study).

It is clear that the results of this study strongly suggest that HCV can be eliminated if treatment is initiated soon after exposure. It is important though to look at another viewpoint on this. It is known that 20-25% of patients will spontaneously clear the HCV virus and not go onto chronic infection.

Keeping that in mind, would it be appropriate to subject all acute cases of HCV to the harshness of interferon therapy? To get a clearer understanding on how to manage the acute cases of HCV a comparison would need to be done looking at the difference in SVR in patients treated immediately after documented HCV exposure or at 6 months when chronic HCV infection can be confirmed. If this study yielded equally effective results, then the 20-25% of patients that usually spontaneously clear the virus after acute infection would not have to be exposed to interferon.

One of the most interesting aspects of this study is the method that participants were recruited. Over 7000 brochures were distributed to hospitals, outpatient clinics, private practices, patient-advocacy groups, and the German Central Registry of Work-Related Accidents. If these results can be replicated and documented to be superior than waiting to treat chronic disease then this speaks strongly to federal, state and local health departments to step up efforts to increase awareness, testing and counseling for

See Acute HCV on page 5

In This Issue:

Healthwise: Milk Thistle.....page 2
Blood Cell Deficiencies.....page 6
Cigarettes & Liver Fibrosis....page 8

Milk Thistle: The Hep C Miracle Herb?

By Lucinda K. Porter, RN

Milk thistle, *Silybum marianum*, is the most commonly used herb for liver problems. One of the most frequently asked questions regarding chronic hepatitis C viral (HCV) infection is about the use of this herb. Patients ask me what I think of it, whether it is safe, how much they should take, and which brand they should buy.

The answers to these questions are not simple. Before I reply to these questions, I want to explain why this is a difficult subject on which to state an opinion.

Traditionally, indigenous practitioners have used herbs as medicine. Anyone can buy milk thistle without a prescription. When using milk thistle, which part of plant is used, when is it harvested, and how is it processed? Botanicals are not made in a lab setting. This means that the consistency of the product is at risk. When a consumer is faced with dozens of products, how does one know what to choose?

The Food and Drug Administration (FDA) does not regulate herbs. Drugs, on the other hand, undergo years of rigorous testing on animals and humans before the FDA allows them to be marketed. There is very little independent research, although there are some good animal studies. Randomized, controlled, double blind placebo controlled studies, the gold standard, is virtually non-existent in the area of botanical remedies, let alone the use of milk thistle and HCV.

It is nearly impossible to find peer-reviewed research on this subject. Since there are no good dose studies on milk thistle, how does one know what amount to take? That said, you might think I am not in favor of botanicals. Actually I have a great respect for herbs and supplements. Many of our most effective drugs use plant by-products. Centuries of herbal practice must certainly have produced some sound observations.

I do, however, apply the same thorough standards to herbs as I do to drugs. I am cautious with what goes through my liver, whether it is food, an herb, a supplement, or a drug. Herbs and supplements can be powerful. As with any medication, please be certain your care practitioner is aware of what you are taking or plan to take. Since herbs can vary in strength and purity, it may be wise to take a standardized and

certified form. The German Commission E is the world's leading authority on herbs, and herb carrying this label meets their high standards. The American Herbal Pharmacopoeia is developing standardization guidelines for the American marketplace.

Tips:

- Before you take an herb or supplement, find out if it is compatible with the other drugs or supplements you are taking. Verify that the supplement is not contraindicated for any other condition you may have (see A Warning about Milk Thistle following this article).

- Tell your doctor all the herbs and supplements you take, even if you think your doctor might disapprove. Nurses and doctors are becoming increasingly aware of herbs.

- Obtain herbs from a trustworthy source. There have been reports of contaminated herbs.

- Choose milk thistle that is standardized.

- Buy products that submit to voluntary self-regulation.

- Do not be swayed by bargain prices. Herbs are not all equal.

- Check the expiration date on the container.

- Follow the label's dosage recommendations. More is not better.

- Herbs and supplements should not be given to children or taken by pregnant or nursing women without a physician's approval.

Do I think it is safe? If you take the suggested dose, are not on one of the medications listed at the end of this article, do not have a complicated health problem, and buy a respected brand, then milk thistle is probably safe. How much should you take? I haven't the slightest idea. I follow the manufacture's guidelines on the label. Which brands are the best? Here I am even less certain. The April 2001 issue of Consumer Reports On Health carried an excellent article on liver disease. One of the sidebars discussed milk thistle. Basically, the article found what I have found - very little reliable research on which to make any recommen-

See Milk Thistle on next page

HealthWise

Milk Thistle

Continued from previous page

dations. The medical consultants for the Consumers Union did state the following:

Patients should not use milk thistle to replace a conventional treatment for viral hepatitis;

Patients should not take milk thistle while on a conventional treatment for viral hepatitis;

Milk thistle is probably safe and no one should be discouraged from taking it if there are no other options;

Choose a brand that contains silibin and phosphotidyl choline, which may be better absorbed.

I tried to find the research that would support the Consumers Union point. I was unable to find solid research that supported the superiority of silibin and phosphotidyl choline. In fact, some of the larger German studies used thisilyn. However, I was willing to take their advice based on their reputation.

Armed with these recommendations along with my own, I went to the largest health food store in my area. I wanted to find a product that had silibin and phosphotidyl choline without a mixture of other substances. I wanted the product to carry one of the more well-known "seals of approval," such as the German Commission E or the National Formulary seal. The milk thistle and liver herbs were lined up on 3 shelves. I read the labels of each and found nothing that met my basic requirements. When I dropped the phosphotidyl choline criterion, I found numerous choices. I have been working on this article for months, hoping to form a neatly wrapped conclusion. I wanted to provide a list of reliable products. Unfortunately, my research prevents me from doing this at this time. I have stopped taking milk thistle myself since I take one of the drugs mentioned in the A Warning about Milk Thistle article. Until I see more convincing research, I prefer to take as little of anything as possible.

The following article appeared on the Internet. Although it was written for an HIV audience, the potential significance of the information cannot be overlooked. Interestingly, Alan Francicus of the HCV Advocate stated that when he included this article on www.hcvadvocate.org, the number of "hits" has been huge.

A Warning About Milk Thistle and

Drug Interactions

The seeds of the milk thistle plant are commonly used to protect the liver from damage caused by hepatitis viruses as well as alcohol and other substances. Compounds found in milk thistle - silibin, sylimarin - act as antioxidants and also stimulate the repair of the liver. But now it appears that these and possibly other compounds in milk thistle can have other effects.

Researchers at the University of Pittsburgh have suspected that milk thistle can slow down or reduce the activity of enzymes in the liver. What does this have to do with HIV? you might ask. Well, enzymes in the liver break down many of the substances that we eat and drink, including medications. If the activity of these enzymes are reduced, then drugs remain in the blood longer than they otherwise might. This could lead to having higher-than-expected levels of drugs in the body, causing side effects or intensifying already-existing side effects.

Indeed, in recent experiments using milk thistle and human liver cells, the researchers found that relatively small concentrations of milk thistle did significantly slow down the activity of the liver enzyme CYP3A4 by 50% to 100%. Many medications taken by people with HIV/AIDS (PHAs) - such as protease inhibitors and non-nukes - are processed by this liver enzyme.

If milk thistle is taken by someone using protease inhibitors or non-nukes, it has the potential to raise levels of these drugs, causing unpleasant or even dangerous side effects.

Below is a short list of some other medications that are processed through the CYP3A4 enzyme. Levels of these medications may increase if taken by people who are also using milk thistle. This list is not exhaustive:

- methadone
- heart drugs - Tambocor (flecainide), Rythmol (propafenone)
- antibiotics - erythromycin, rifampin
- anti-seizure drugs - carbamazepine (Tegretol)
- antidepressants - St. John's wort, Zyban/Wellbutrin (bupropion), Paxil (paroxetine), Prozac (fluoxetine), Luvox (fluvoxetine) Serzone

See Milk Thistle on page 5

Schering Sues to Stop Generic Ribavirin

By Alan Franciscus
Editor-in-Chief

In an attempt to block manufacturing and sale of a generic ribavirin, Schering-Plough recently filed lawsuits against Novartis' Geneva Pharmaceuticals and Three River Pharmaceuticals LLC claiming patent infringement.

The lawsuit was prompted by applications filed with the FDA by Geneva Pharmaceuticals and Three Rivers Pharmaceuticals to manufacture and sell a generic form of ribavirin.

Schering is claiming that both companies are infringing on two of Schering's process patents. "Given the proclivity these days of large brand name pharmaceutical companies to sue potential generic

competitors, it came as no surprise that Schering filed a suit against Three Rivers for patent infringement" said Three Rivers President, Don Kerrish. "Three Rivers is confident that it is not infringing on any of Schering's patents, in fact we took great pains to design a product that was very different from Schering's. We view this as just another attempt to block entry of a low cost generic alternative."

The financial stakes are enormous with profit potentials in the hundreds of millions of dollars. Just the fact that Schering has filed these lawsuits will prevent the FDA from approving the generic applications for up to 30 months, thereby guaranteeing Schering exclusive marketing rights and earnings for their HCV drug.

Pegasys Approval Delayed

By Alan Franciscus
Editor-in-Chief

According to a recent article from Dow Jones Newswire, the U.S. Food and Drug Administration (FDA) has delayed marketing approval for Roche's Pegasys, a form of pegylated interferon to treat hepatitis C (HCV).

The FDA approval of Pegasys was expected earlier this year, but in April 2001 the FDA sent a letter to Roche requesting more information about their marketing application. Roche has not disclosed the contents of the letter from the FDA, but many industry experts believe that it has more to do with manufacturing concerns than with safety or efficacy.

A spokesperson for Roche stated that they are still hope to launch Pegasys in the first quarter of 2002, but industry insiders believe that it will be closer to the end of 2002.

The other brand of pegylated interferon, Schering's Peg-Intron was FDA approved earlier this year. The combination of Peg-Intron and Rebetol (ribavirin) was recently approved for treating HCV by the FDA and should be available to the public within a couple of weeks. Roche has also submitted an application to the FDA for marketing approval of the combination of Pegasys and ribavirin. It is unclear how the delay in approval for Pegasys will affect the approval of Roche's new combination therapy.

Alan Franciscus.....Founder/Editor-in-Chief
e-mail: sfhepcat@msn.com
Joe Shaw.....Managing Editor
e-mail: joeesha@yahoo.com
C.D.Mazoff.....Contributing Editor
Liz Highleyman.....Contributing Editor
Webmaster: Richie Lam

Affiliated with:
Back To Life A group dedicated to providing patient education and support.
Orange County.....Carol Craig 949-654-4250
Santa Barbara.....

You may contact us at:
P.O. Box 427037
San Francisco, CA 94142-7037

The HCV Advocate offers information about various forms of intervention in order to serve our community. By providing information about any form of medication, treatment, therapy or diet we are neither promoting nor recommending use, but simply offering information in the belief that the best decision is an educated one.

Permission to reprint is granted and encouraged with credit to the Hepatitis C Support Project.

Hepatitis C Support Project - A Tides Center Project

Milk Thistle

Continued from page 3

(nefazodone), Zoloft (sertraline), Effexor (venlafaxine)
 antihistamines - Hismanal (astemizole), Seldane (terfenadine)
 antifungals - itraconazole (Sporanox), Ketoconazole (Nizoral)
 gastrointestinal motility agents - Prepulsid (Cisapride)
 ergot drugs - Ergonovine, Ergomar (ergotamine)
 anti-psychotics - Clozaril (clozapine), Orap (pimozide)
 sedatives/sleeping pills - Ambien (zolpidem), Halcion (triazolam), Versed (midazolam)
 lipid-lowering drugs (statins) - Lescol (fluvastatin), Mevacor (lovastatin), Pravachol (pravastatin) and Zocor (simvastatin), Baycol (cerivastatin)
 transplant drugs - cyclosporine (Neoral, Sandimmune), ProGraf (tacrolimus) Milk thistle also has the potential to lower levels of the following drugs:
 anti-parasite drugs - Mepron (atovaquone)
 sedatives/sleeping pills - Ativan (lorazepam)
 hormones - estrogen

The research by the scientists in Pittsburgh should emphasize to readers that simply because a product is “natural” it does not mean it is safe when taken with other substances. This research also shows the need to conduct further research on herb-drug interactions on liver cells as well as in people. Such studies may

find combinations of herbs and drugs that can be safely used together. The Pittsburgh researchers noted that “patients and health care professionals must be encouraged to discuss the use of herbs and be educated about the potential interactions between herbs and drugs.” This cannot be stressed enough.

Reference: Venkataramanan R, Ramachandran V, Komoroski BJ, et al. Milk thistle, a herbal supplement, decreases the activity of CYP3A4 and uridine diphosphoglucuronosyl transferase in human hepatocyte cultures. Drug Metabolism and Disposition 2000;28(11):1270-1273.

Copyright 2001, Lucinda K. Porter, RN
 All Rights Reserved

Lucinda K. Porter, RN is a research nurse and patient educator at Stanford in the area of hepatology. She co-facilitates a support group and is active in many aspects of hepatitis C education. In addition to being HCV positive, she has a life which include her husband and teenaged daughter.

Acute HCV

Continued from page 1

HCV to help identify newly infected HCV individuals. Such an approach may also prove to be economical in managing HCV as acute treatment did not include ribavirin, which is extremely expensive. In addition this approach would decrease associated costs of managing chronic HCV such as liver biopsy, lab tests, and lost work productivity to name a few.

Help Us Reach More People with Hepatitis C! Support us through either a paid subscription or donation.

Yes, I'd like to subscribe.

- \$12 one year—12 issues
- \$6 one year—12 issues (for those with fixed incomes)
- Renewal

I'd like to make a tax deductible donation.

- \$10 \$25 \$100 other

Please make checks payable to:
 HCSP/The Tides Center

The Hepatitis C Support Project does not share its mailing list with any individual or organization. All subscribers names and addresses are strictly confidential.

Name _____

Address _____

City _____

State _____ Zip _____

Please mail form to: HCV ADVOCATE
 P.O. Box 427037
 San Francisco, CA
 94142-7037

Blood Cell Deficiencies and HCV

By Liz Highleyman
Contributing Editor

Blood cell deficiencies - anemia, neutropenia, thrombocytopenia - are often seen in people with chronic hepatitis C. Different blood cell deficiencies have different causes and can lead to a variety of symptoms, including fatigue, increased risk of infection, and easy bruising.

Blood Cell Basics

Blood contains various types of cells circulating in a fluid called plasma. These include red blood cells (RBCs), which carry oxygen to the body's tissues; white blood cells (WBCs), which are important to the body's immune response; and platelets, which are involved in blood clotting. Low blood cell counts are caused by either inadequate blood cell production or excessive blood cell loss or destruction. The production of blood cells is known as hematopoiesis. In adults, blood cells are manufactured in the bone marrow, a spongy tissue inside certain bones. The bone marrow contains a type of cell called pluripotent stem cells that develop into all the different types of blood cells. These stem cells and various "precursor" blood cells are stimulated by chemical messengers called cytokines. Damage to the bone marrow - for example, due to toxic drugs or radiation therapy - often leads to blood cell deficiencies.

Drugs for HCV, HIV disease, cancer, and numerous other diseases are associated with bone marrow damage and low blood cell counts. Healthcare providers perform a variety of tests to determine if blood cell numbers are normal and if the cells are functioning properly. A complete blood count is an inventory of all of the different types of cells in the blood. A peripheral smear involves looking at a blood sample under a microscope to determine cell size and shape. A hematocrit indicates the percentage of blood that is made up of cells. A bone marrow biopsy may be done to look for stem cells and precursor blood cells.

Types of Blood Cell Deficiency

Anemia

Anemia is a diminished ability of RBCs (also

known as erythrocytes) to provide oxygen to the body. This may be due to a low level of hemoglobin (a pigment in RBCs that binds to oxygen), a reduced number of RBCs, or an impairment of the cells' ability to carry oxygen. In a person with anemia, the heart must work harder to circulate more blood to carry enough oxygen to the tissues. People with anemia often feel fatigued, are easily overexerted, and may be short of breath. Other symptoms include weakness, decreased mental alertness, headache, dizziness, and pallor (paleness). There are many different types of anemia. It can result from the loss of blood, for example due to injury.

Aplastic anemia occurs when the bone marrow is damaged and does not produce enough RBCs. The body requires certain nutrients (iron, vitamin B12, folic acid) to manufacture healthy RBCs. Inadequate amounts of these nutrients in the diet - or an inability to absorb them - can lead to iron deficiency anemia, pernicious anemia, or megaloblastic anemia. People with HCV who experience loss of appetite (anorexia) may be at risk for anemia related to inadequate nutritional intake.

Hemolytic anemia occurs when RBCs are destroyed faster than they can be replenished. This type of anemia can be caused by an inherited disorder, an immune response that destroys RBCs, or diseases such as malaria. Anemia of chronic disease may occur in people with a long-term illness, and is thought to result from a combination of a shortened RBC life span and inadequate production of new RBCs. Anemia is a symptom rather than a disease.

To treat it properly, the cause must first be determined. If anemia is related to a nutritional deficiency, dietary supplements may be recommended. If a drug is causing bone marrow suppression, it may be necessary to lower the dosage or stop the drug. One effective treatment for anemia due to inadequate RBC production is erythropoietin (EPO, brand names Epogen and Procrit). EPO is a genetically engineered version of a natural cytokine that stimulates RBC production in the bone marrow. Side effects include increased blood pressures, headache, joint pain, and fatigue. In severe cases of anemia, transfusions are

Continued on next page

Blood Cell Deficiencies

Continued from page 6

the quickest way to increase RBC levels, although they do not address the underlying cause.

WBC Deficiencies

The blood contains several types of white blood cells (also known as leukocytes). These include various types of granulocytes such as neutrophils, eosinophils, and basophils (which make up over 60% of WBCs); lymphocytes, such as T-cells, B-cells, and natural killer cells (about 30% of WBCs); and monocytes and macrophages (about 6% of WBCs). Each type plays a role in immune system defenses. A deficiency of WBCs in general is called leukopenia. However, it is more common to speak of low levels of specific types of WBC.

Neutropenia is a low neutrophil count. Neutrophils are phagocytic cells that engulf invading pathogens. The term granulocytopenia in practice also refers to a shortage of neutrophils, since they are by far the most numerous type of granulocyte. Neutropenia is most often caused by damage to the bone marrow (although genetic defects and autoimmune reactions are also possible causes). Because neutrophils proliferate rapidly, they are especially sensitive to toxic drugs and radiation therapy. People with neutropenia are prone to infections, especially those caused by bacteria. Thus, early symptoms may include fever, fatigue, and sore throat.

Neutropenia may be treated using genetically engineered versions of two cytokines called granulocyte colony-stimulating factor (G-CSF or filgrastim, brand name Neupogen) and granulocyte-macrophage colony-stimulating factor (GM-CSF or sargramostim, brand named Leukine and Prokine), which stimulate the production of neutrophils. Side effects of G-CSF include fever, bone pain, and elevated liver enzymes. Side effects of GM-CSF include fever, chills, headache, muscle and bone pain, and elevated liver enzymes. People with chronic hepatitis should be careful using these drugs because of their effect on the liver.

Lymphocytopenia is a low level of lymphocytes. B-cells produce antibodies, while T-cells play various roles in immune defense. Lymphocytopenia may be caused by a variety of factors including bone marrow suppression, nutritional deficiency, and certain infectious diseases (for example, HIV disease destroys

helper T-cells). B-cell deficiencies may be treated with gamma globulin (antibody) injections. Low T-cell counts are sometimes treated with genetically engineered versions of interleukin 2. Monocytes are large blood cells that migrate into the tissues of the body and mature into macrophages, scavenger cells that engulf pathogens. There is no common blood deficiency specifically characterized by low numbers of these cells.

Thrombocytopenia affects platelets (also known as thrombocytes), small cell fragments that are crucial for normal blood clotting. They are produced when large blood cells called megakaryocytes are broken down. When an injury occurs, platelets form a plug at the site of damaged blood vessels and produce substances that promote blood coagulation and wound healing. An abnormally low number of platelets is called thrombocytopenia.

It may result from bone marrow suppression or increased destruction of platelets, for example due to an autoimmune reaction. Excess platelet destruction may also occur when the spleen is enlarged, since macrophages in the spleen remove platelets from circulation. Thrombocytopenic purpura is a bleeding disorder caused by insufficient platelets that is characterized by purplish bruises under the skin. Genetically engineered thrombopoietin (TPO), a cytokine that stimulates platelet production, is undergoing clinical trials. People with thrombocytopenia may be given whole blood or platelet transfusions. In severe cases, the spleen may be removed.

Blood Cell Deficiencies and HCV

Various blood cell deficiencies are common in people with chronic hepatitis C. HCV itself may lead certain deficiencies, although the exact mechanisms are not clear.

For example, possible hypotheses put forth to explain thrombocytopenia in people with HCV include autoimmune reactions mediated by the hepatitis C virus, decreased TPO production when the liver is damaged, and spleen enlargement related to portal hypertension. A type of severe aplastic anemia is sometimes seen in people with acute hepatitis, but it appears to be associated with an

See Blood Cell Deficiencies on page 9

Cigarette Smoking and Hep C?

By Alan Franciscus
Editor-in-Chief

It is known that progression of liver fibrosis in people with chronic hepatitis C patients is exasperated by the relationship between HCV and age, age at exposure to HCV, duration of infection, being of the male gender and alcohol use.

The range of liver injury in patients with chronic hepatitis C is very expansive and precursors to the degree of liver lesion severity and the progression of liver lesions are poorly understood.

To date, cigarette smoking has been autonomously linked to the risk of alcoholic cirrhosis in two studies. The first was published in Am J Epidemiol 1992; 136:1248-1257 'Alcohol, smoking, coffee and cirrhosis'.

The second was published in the Eur J Epidemiol 1994; 10:657-664 'The effect of drinking coffee and smoking cigarettes on the risk of cirrhosis associated with alcohol consumption: a case study'.

In addition cigarette smoking was found to be independently related to the risk of cirrhosis in a cohort of 1,506 chronic hepatitis B carriers. This data was published in the Am J Epidemiol 1997; 145:1039-1047.

In a more recent study from France, researchers found that smoking cigarettes increased 5-year mortality rates in patients with alcoholic cirrhosis. This data was published in Hepatology 1998; 28:384A.

Furthermore, tobacco use has been linked to an increase in hepatocellular carcinoma and synergism between tobacco use and alcohol has been proposed based upon some research done in Japan.

It is clear that hepatotoxicity of cigarette smoke has been identified in epidemiological and experimental studies. But what is the relationship between smoking and liver fibrosis in patients with chronic hepatitis C?

In a recent study published in Hepatology July 2001 investigators from Clichy, France studied the relationship between smoking and liver fibrosis in patients with chronic hepatitis C. The study was conducted on 310 HCV patients. The relationships between age, gender, alcohol use, method of contami-

nation, tobacco use and Knodell fibrosis scores and activity were examined and analyzed.

The analysis was trying to look at smoking as an independent risk factor and not a collective risk factor with alcohol and other known risk factors as has been shown in other studies, this is called a multivariate analysis.

In addition if smoking was not analyzed as an independent risk factor a simple analysis (univariate analysis) would allow results to cancel each other out and the results would be biased and not of great value in this study design.

The results of the study showed a significant relationship between tobacco use and liver histology in people with chronic hepatitis C. This correlation was independent of other risk factors that had been included in the multivariate analyses, which were age, gender, method of contamination, prior and current alcohol use, length of infection, genotype and viral load.

As expected, smoking was strongly linked to other risk factors such as gender, injection drug use and alcohol use. An unexpected finding of the study was that cigarette smoking increased with patients that were younger in age, which the researchers believe is caused by the relationship between smoking and injection drug use. The investigators of this study suggest that the fibrotic effect of cigarette smoking is likely a result of enhanced activity of HCV. In summary, there is a significant relationship between hepatic lesions and cigarette smoking in patients with chronic hepatitis C that is independent of other risk factors.

Since cigarette smoking was not excluded in many of the previous studies that have been done on the fibrotic effects of alcohol in HCV, further studies need to be conducted to determine the possible hepatotoxic effects of cigarette smoke and its relationship with toxicity of alcohol.

It is feasible that the fibrotic effects of alcohol in HCV patients observed in the studies done in France that were published in Hepatology in 1997 and 1998 may be overestimated because the association with smoking cigarettes was not factored into these studies.

But what is the relationship between smoking and liver fibrosis in patients with chronic hepatitis C?

Risk Factors for HCV Among Street Youth

By Alan Franciscus
Editor-in-Chief

Recently there was an article published in the Canadian Medical Association Journal, 2001;165: 557-560 in which investigators analyzed the relative risk of street youth contracting hepatitis C.

Not surprisingly, they found that injection drug use is the major factor associated with street youth developing HCV. Other factors include older age as well as crack cocaine use.

The investigators recruited 437 Montreal street youth between the ages of 14 and 25 years. All subjects reported habits that put them at risk of blood-borne diseases. Of the recruited youth, 45.8% injected drugs, 56.5% had at least one tattoo and 78.3% had body piercing.

The overall prevalence of HCV infection among this group of street youths was 12.6% versus the estimated .08% found in the general Canadian population. The investigators found that street youth that had more than one tattoo were also marginally associated with HCV infection.

“Association between age and HCV infection may reflect the cumulative effect of risk behaviors (duration and frequency of injection) or an interaction between risk behaviors and risk networks,” they said. “Younger street youths, especially minors, usually interact with people of their own age, with a low prevalence of infection, which may protect them somewhat from acquiring HCV.”

The investigators summarize that injecting drugs, being more than 18 years of age and using crack cocaine were independent risk factors for HCV infection. It was also determined that having more than one tattoo was marginally associated with HCV infection although body piercing was not.

What is disturbing is the low number of street youths infected with HCV that are even aware of

their infection. In this study of the 55 HCV infected youths identified only 15 (27.3%) reported that they were HCV positive in the initial questionnaire.

Like all studies there are a few caveats. First, these results cannot be generalized to other groups of street youth. Secondly, in this study participants were recruited through community organizations and therefore this sample missed street youths that do not utilize community organizations.

It is clear that there needs to be more intervention efforts targeted at street youth to prevent initiation into injection drug use and/or a more concerted effort to educate on techniques to prevent HCV transmission among injection drug users if the epidemic of HCV in our street youth is going to be curbed.

Blood Cell Deficiencies

Continued from page 7

agent other than the hepatitis A, B, or C viruses. The drugs most often used to treat chronic HCV are known to cause blood cell deficiencies. Alpha interferon (both standard interferon [Intron-A] and pegylated interferon [Peg-Intron]) is associated with neutropenia and thrombocytopenia. Because different types of blood cells are affected, it is believed that interferon suppresses the bone marrow. For most people, these are not major, treatment-limiting side effects.

In contrast, hemolytic anemia (blood cell destruction) is the most common side effect of ribavirin (Rebetol), and in some cases can be severe. Combination therapy with alpha interferon and ribavirin is most likely to cause blood cell deficiencies in the first several weeks of treatment. Studies suggest that EPO can improve anemia in people taking alpha interferon/ribavirin for HCV, allowing them to tolerate higher doses of ribavirin. In severe cases, it may be necessary to reduce the dose of ribavirin or stop it altogether. Always consult your doctor before adjusting doses or stopping any drug. Finally, people with chronic HCV – especially those receiving treatment – should get regular blood tests, so that blood cell deficiencies can be detected and treated early.

Liz Highleyman (liz@black-rose.com) is a freelance medical writer and editor. She has a certificate in public health from the Harvard School of Public Health. She has worked as an editor of the Bulletin of Experimental Treatments for AIDS (BETA), published by the San Francisco AIDS Foundation, and as health editor for the Internet search engine Ask Jeeves

HelpLines:

Southern California
1-888-85LIVER
Northern California
415-978-2400

Clinical Trials

National Trials

ROCHE - 866-GO-WINGS
NIH - HALT-C (Cirrhosis)
800-4112-1222

Northern California

University of San Francisco Medical Center
Stephanie Straley, PA (415) 514-2369
VA Hospital-UCSF
(415) 750-2105
California Pacific Medical Center
Linda Brooks (415) 202-1504 or (415) 202-1506
San Francisco General Hospital
Athiana (415) 206-3725
San Francisco
Dr. Cazen (415) 565-6288
Stanford University Hospital
Stanford Liver Research Clinic (650) 724-7057

Quest Medical Research (HIV/HCV Coinfection)
Dr. Lalezari (415) 353-0800
East Bay Liver Clinic
Oakland, CA - Grant Young (510) 208-1777
Dr. John J. Jolley - San Rafael
Contact: Lynn Jolley
(415) 257-3030

Southern California

USC Hepatitis Research Clinic
Dr. Karen Lindsay, Susan Milstein, RN
(323) 442-5550
UC Irvine Medical Center
Dr. John Hoefs, Barbara Walker, RN
(714) 456-7821
VA Medical Center Long Beach
Dr. Timothy Morgan, Julia Sanborn, RN\
(562) 494-5933
Santa Barbara/Ventura Counties
Dr. Kip Lyche (805) 641-6525

HCSP
P.O. Box 427037
San Francisco, CA
94142-7037