

Update on Hepatitis C from DDW

Alan Franciscus, Editor-in-Chief

PART 2

Part 2 of this report will focus on the epidemiology of hepatitis C with an emphasis on the racial impact.

The incidence of hepatocellular carcinoma (HCC), a type of liver cancer, is rising in the United States with HCV infection accounting for one-third of the cases. Early detection through screening may offer the best hope for treatment and improved survival. Identifying high-risk patients is an essential requirement for a cost-effective screening program. No study to date has examined race as a potential risk factor for HCC in a diverse U.S. population with HCV cirrhosis. There was a poster presented titled "African Americans and Asians with Cirrhosis Have Higher Risk for Liver Cancer." In this study, researchers performed a hospital-based, clinic-based case-control study of 507 patients with HCV cirrhosis at 4 study centers using pathology records, ICD-9 diagnosis, and patient visits to the study centers. Hepatitis B carriers and patients with chronic hepatitis B, HIV or other malignancies were not included in this study. Cases were confirmed by cytology (the

science that deals with formation, structure, and function of cells), histology and/or by the presence of focal hypervascular hepatic mass (on biphasic CT, MRI and/or angiogram) and elevated AFP (*α*-fetoprotein). HCC was ruled out in controls by negative AFP and imaging studies. Multivariate logistic regression was employed to examine associations between HCC and race. Adjustment was made for age, gender, severity of liver disease (MELD score, Child class), moderate-to-heavy alcohol use, and study centers. For all variables, values at diagnosis were obtained for HCC cases and at first negative AFP and x-ray for controls. The investigators identified 205 HCC cases and 264 controls without HCC. Thirty-eight patients could not be classified as cases or controls based on the above criteria and were excluded.

HCC patients were significantly older (median age = 59 vs. 52, $p < 0.001$), more likely to be male (84% vs. 71%, $p = 0.001$), more likely to be Child class C (57% vs. 43%, $p = 0.001$), and had slightly higher MELD scores (median MELD = 11 versus 10, $p = 0.05$). There was no significant association between alcohol use or Hispanic race ($n = 66$) and HCC compared with Caucasians ($n = 274$). After adjustment was made for age,



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gender, MELD score, Child class, moderate-to-heavy alcohol use, and study centers, multivariate OR was 3.0 for African Americans ($n = 38$, $p = 0.003$) and 5.7 for Asians ($n = 83$, $p < 0.0001$) as predictors for HCC.

The authors concluded that African Americans and Asians with HCV cirrhosis may have 3 and 6 times higher risk for HCC as compared to their Caucasian counterparts, independent of age, gender, severity of liver disease, and alcohol use. Additionally the authors concluded that a genetic study of liver cancer in a racially diverse population should be carried out, and high-risk ethnic patients may be among those with HCV cirrhosis who would benefit the most from HCC screening.

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Hepatitis C Treatment Tips

■■■
Judy Grossi, LVN

This month's column has been written by guest writer Judy Grossi, LVN. Judy provides nursing support for the Stanford hepatology outreach offices in San Luis Obispo and Northern Santa Barbara County. She works with Aijaz Ahmed, M.D. and Joanne Imperial, M.D. Judy Grossi provides some excellent suggestions for patients undergoing treatment for chronic hepatitis C virus (HCV) infection. This article is not intended to replace medical advice. Please consult your physician for all medical concerns. The Advocate does not endorse the use of particular brands or products mentioned by its authors. Lucinda Porter thanks Judy for her contribution.

Your physician has prescribed PEG-Intron (Peginterferon alfa-2b) or Pegasys (Peginterferon alfa-2a) and ribavirin treatment for hepatitis C (HCV). Each box of medication contains a single dose. You will be taught to give yourself this medication by subcutaneous injection once each week during treatment. Ribavirin (*Rebetol* or *Copegus*) capsules or pills should be taken in the morning and evening hours with food during the course of treatment. It is recommended that you begin your therapy with the injection in the evening followed by the ribavirin the next day.

Some common side effects include fever, chills, body ache, headaches, fatigue and occasional nausea. Some patients have verbalized "brain fog," which may include mental confusion, memory loss, and/or lack of alertness. The anxiety of dealing with hepatitis C, the deluge of information given to the patient and the effects of treatment may create forgetfulness and confusion for some patients. These symptoms are expected and may be worse with the first injection, but generally subside substantially by the third or fourth injection. You can reduce the impact of the symptoms by administering your injections near bedtime. This will allow you to sleep through most of the side effects. Acetaminophen (*Tylenol*) can help to reduce the flu-like symptoms. Using extremity wraps, thermal or electric blankets, or a hot water bottle may alleviate chills. It might be helpful to time the medication administration with your work schedule, such as a

Thursday or Friday evening for weekly injections.

Fatigue is another common side effect of HCV therapy. Adequate hydration is encouraged—it is advised that you drink 2 to 3 liters of fluid per day. To minimize sleep interruption, avoid drinking fluids 1 to 2 hours prior to bedtime. You will hydrate yourself better if you drink sips of fluid throughout the day, rather than gulp large amounts at one time. Light to moderate exercise is also recommended. If you are already participating in an exercise program, stay with that program. If you are not participating in an exercise program, start walking or swimming to increase your activity level. Always check with your physician before you start any exercise program. Your physician will be monitoring your complete blood count (CBC), chemistry panel, thyroid function and other lab values during this course of treatment. **Check with your physician regarding regular laboratory follow-up.**

The following is a list of medication issues and some reported side effects. You may or may not develop these. Many of the medication side effects are similar to if not the same as the symptoms of HCV itself.

ALCOHOL

Avoid the use of alcohol during treatment.

ANEMIA

Ribavirin may cause hemolytic anemia. Hemoglobin levels (the part of the red blood cell that transports oxygen) typically decrease within the first 4 to 6 weeks of therapy. Anemia may lead to fatigue as well as other symptoms. Your clinician may treat this anemia by reducing your ribavirin dose and/or prescribing epoetin alfa (*Procrit* or *Epogen*).

NEUTROPENIA

Neutrophils are a category of white blood cells. A significant reduction of these is called neutropenia. Should you develop neutropenia your clinician may treat this with dose reduction of interferon or prescribe *Neupogen*.

Both *Procrit* and *Neupogen* are expensive, self-injectable medications. The use of these medications has

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not been well-studied, is not necessarily standard care, and may not be covered by your insurance.

BAD BREATH

Treatment may cause you to be dehydrated and may delay wound healing. When your mouth is dry, the combination of the dryness and bacteria can lead to dental problems (i.e., gingivitis, mouth sores, bad breath.) Gargle with warm saline solutions. Golden-seal or chamomile teas have been reported to promote wound healing.

BIRTH CONTROL

Ribavirin is a drug associated with birth defects. It is essential that female patients as well as female partners of male patients receiving ribavirin avoid pregnancy during treatment and for 6 months after ribavirin is discontinued. Even if you or your partner has had a sterilization procedure (i.e., vasectomy or tubal ligation), it is recommended that you use an additional form of contraception as there have been documented cases of pregnancy post sterilization.

CHEMICALS

Remember that everything you inhale or ingest is synthesized or processed in your liver. Try to avoid gasoline fumes, turpentine, furniture stripping solvents, toxins, cleaning fluids, perfume, acrylic fingernails, and tobacco smoke.

COLDS/FLU

It is strongly advised that you obtain your flu shot. Try to avoid exposure to cold or flu viruses. Remember to wash your hands – this is very important in preventing the spread of germs. Hand to mouth and hand to eye infections can be common methods of disease transmission.

DEPRESSION

Signs of depression may include, but are not limited to, anger, cognitive thought changes, irritability, apathy, crying, and rage. Discuss this with your physician. If an anti-depressant is prescribed, it may take

up to 4-6 weeks before a significant improvement is noticed.

Do not isolate yourself from people! Please consider attending a support group, calling on your friends, and/or talking to a counselor or pastor. You are not the only person suffering from side effects while on treatment.

DIET

Strive for the healthiest diet possible. Try to maintain an adequate amount of protein, carbohydrate, and fiber. Eat small frequent meals.

DIGESTIVE PROBLEMS

It is recommended that you take ribavirin with food. Patients have indicated that yogurt helps with minor digestive problems. Look for products with live cultures, such as lactobacillus acidophilus, a natural digestive bacterium.

DRY EYES

Avoid products that tout “gets the red out,” such as *Murine* or *Visine*. These are decongestants that can increase eye redness, dryness and irritation after prolonged use. Try moisturizing eye drops such as *Bion-Tears*, *GenTeal*, *Refresh*, *TheraTears*, or any of the many over the counter products that provide dry eye relief. If you use artificial tears regularly, choose “preservative-free” brands.

DRY MOUTH

Some patients recommend *Biotene*, an over the counter product found with other dental products. *Biotene* has been found to promote salivary secretions. It is available as a toothpaste, mouthwash and chewing gum. If your local pharmacy/drug store does not carry this product, ask for it. Some sporting goods stores also carry chewing gum that will promote salivary secretions.

FATIGUE

Take care of YOU! Take catnaps. Get a massage. If your work schedule permits, you may elect to take time off for those times you need extra rest.

HAIR LOSS OR HAIR THINNING

Try cutting back on washing your hair as frequently as you did prior to starting treatment. Good results have been reported with *Nioxin*. This product reportedly stimulates the scalp to promote healthy hair growth or thickening. This product is available in hair salons and salon supply stores. It is recommended that

***Should you develop suicidal thoughts—
contact your physician immediately
regardless of time of day or night.***

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Extrahepatic Manifestations of Hepatitis C

Part 2: Dermatologic Disorders



Kara Wright, PA-C

There are numerous systems affected by the hepatitis C virus. In continuing with a discussion of these extrahepatic manifestations, this month's article will focus on the dermatologic disorders that can occur in patients with hepatitis C.

Porphyria Cutanea Tarda

Porphyria cutanea tarda (PCT) is a rare skin disorder which seems to be related to the hepatitis C virus (HCV). PCT is caused by the reduced activity of an enzyme, which leads to the build up of the protein uroporphyrinogen in the blood and urine of patients. It is not certain why this occurs, but it is clear that there is a strong association between HCV and PCT. HCV infection may cause or act as a trigger for PCT.

The skin and the liver are the two main sites affected by PCT. Skin lesions and skin sensitivity to light characterize the disease. Exposure to the sun or any minor trauma can cause redness and severe blistering. PCT can also cause skin discoloration, either darkening or lightening of the skin, increased facial hair, and thickening of the skin.

Liver disease is a common finding in PCT. Liver biopsy shows a wide range of liver damage associated with PCT. Most patients seem to have some degree of iron overload, and many drink excessive amounts of alcohol, although this is not always the case. Often, patients don't have either of these inciting agents, so this is why HCV is suspected in the onset of many cases.

Diagnosis is often suspected from the clinical history. It can be

confirmed by measuring increased amounts of uroporphyrin levels in a 24-hour urine sample. The normal range is 10-50 mcg/day, but values above 800 mcg/day are seen in many affected patients.

Once the diagnosis is established, the provider must check the liver iron stores and determine the patient's HCV status. Patients should also be checked for hemochromatosis, which is an inherited disorder of iron overload in the liver.

Although there is no cure, PCT is manageable. Patients should avoid factors that precipitate attacks, such as alcohol and estrogens. Symptomatic relief may be obtained by phlebotomy. A relatively small amount of iron removal often leads to improvement in both dermatologic and hepatic manifestations. Remission is possible, but patients typically experience a relapse at some point. Relapses will again respond to phlebotomy. Patients must avoid iron supplementation after phlebotomy to prevent relapse.

Chloroquine, a medication used to treat malaria, has also been successful in refractory cases of PCT. The medication is able to remove excess uroporphyrins from the tissues. Patients typically take low doses of the medication (125 mg to 250 mg 1 to 2 times weekly).

Treatment of HCV with interferon alpha has also been shown to be efficacious in the management of PCT related to hepatitis C. Reduction of the viral load in some cases has been shown to

decrease skin lesions as well as urinary uroporphyrins.

Lichen Planus

Lichen planus is a skin disorder of unknown cause. It is seen in a variety of liver diseases, particularly advanced liver disease associated with HCV. HCV antibodies are present in 10-40% of these patients. There are also reports of exacerbation of lichen planus due to interferon treatment, with resolution of symptoms after discontinuation of treatment.

Lichen planus is characterized by flat-topped, shiny, itchy papules (bumps). It typically affects the skin, nails, mucous membranes (esp. the mouth), vulva, and penis. There is a characteristic lacelike pattern on the surface of the papules and plaques (a patch on the skin or on a mucous surface). The most common sites of skin involvement are the bending surfaces of the extremities, particularly the wrists. There is often intense itching or pain as the lesions ulcerate or erode. The disease often heals with significant skin discoloration.

When nails are involved, it can be minor dystrophy to total nail loss. Nail involvement is often resistant to treatment. When it occurs on the scalp, patients can have areas of hair loss with papules. If left untreated, this can lead to scarring. Hair regrowth does not occur once follicles are destroyed. Diagnosis is usually based on the lesion's clinical appearance in a characteristic location. A skin

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EXTRAHEPATIC MANIFESTATIONS

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biopsy may be done to confirm a clinical diagnosis and usually shows dense cellular infiltration in the upper skin layer.

Treatment of lichen planus is based on where the lesions occur. Mouth lesions are treated with high potency topical steroids with response rates up to 75%. Fluticasone propionate spray and betamethasone sodium phosphate mouth rinse are both effective in reducing lesion size and symptoms. Oropharyngeal candidiasis (thrush) is a potential complication of steroid use, but can be treated with miconazole ointment or chlorhexidine rinse.

Body lesions are treated with medium to high potency topical steroids twice daily. Oral steroids may be used in patients with generalized lichen planus involving much of the skin. It is reasonable to begin with prednisone 30-60 mg daily for 4-6 weeks and taper over 4-6 weeks. Acitretin 30 mg daily (a medication commonly used to treat scabies) is a reasonable alternative to steroids. Oral antihistamines may be helpful for controlling the itching.

Vasculitis

Vasculitis may occur in conjunction with essential mixed cryoglobulinemia (discussed last month). Vasculitis may be directly caused by a drug, occur in association with a known disorder, such as infection (essential mixed cryoglobulinemia with HCV), or occur from an unknown cause.

The symptoms of vasculitis are thought to be due to immune complexes being deposited in the blood vessels. It is often called serum sickness because historically vasculitis has been associated with

the reaction in patients after receiving foreign serum.

The common symptoms include purpura (discoloration of the skin caused by bleeding vessels) and petechiae (red pin point rash caused by minute hemorrhaging) usually involving the lower extremities. Fever, urticaria (itching, welts), muscle aches, and enlarged lymph nodes are other common symptoms. Some patients even experience peripheral neuropathy, which is a tingling or numbness of the feet or hands due to decreased blood flow to the area. The disorder is usually acute, but can be chronic when associated with hepatitis. Visceral organ involvement is rare, but it can affect the kidneys, liver, and rarely the lung, heart, and central nervous system.

To make the diagnosis of vasculitis, the patient must meet three or more of the following criteria: age greater than 16, use of possible offending drug, palpable purpura, rash, biopsy of lesion showing white blood cells around a small artery or vein. Skin biopsies typically show inflammation of the small blood vessels.

The treatment of vasculitis is determined by the cause. First, the patient should try to stop any medication that may have caused the reaction. If the patient has HCV, treatment of the underlying infection with interferon and ribavirin is the best option. Drugs such as colchicines, antihistamines, and dapsone may be helpful in severe or persistent cases, but patients with severe or systemic disease should be referred to a dermatologist.



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Thyroid Disease and HCV



Liz Highleyman

Thyroid disorders are among the many conditions that may occur in people with chronic hepatitis C. Various studies indicate that somewhere between 2% and 20% of people with HCV will develop thyroid problems. While thyroid dysfunction can be caused by interferon therapy, research shows that it is also associated with HCV itself. Fortunately, thyroid problems are readily treatable.

The Thyroid Gland

The thyroid is a butterfly-shaped endocrine gland located in the neck below the larynx (voice box). It produces hormones that regulate metabolism, affecting many bodily systems. The thyroid gland is stimulated to produce its own hormones by another hormone—thyroid-stimulating hormone, or TSH—released by the pituitary, the “master gland,” in the brain. In response to TSH, the thyroid takes up iodine from food and uses it to produce the hormones T3 and T4 (thyroxine), which are then released into the bloodstream. In a complex feedback loop, levels of thyroid hormones in the blood influence how much TSH is released, while the production of TSH is in turn regulated by thyrotropin-releasing hormone (TRH) secreted by the hypothalamus, another gland in the brain.

Thyroid Disorders

There are several different conditions related to the thyroid, including:

Hypothyroidism

An underactive thyroid, or insufficient production of thyroid hormones, leading to decreased

metabolic activity. Symptoms may include fatigue, sensitivity to cold, constipation, muscle weakness, depression, weight gain, and heavy menstruation in women. The condition usually progresses over time and may lead to coma and death.

Hashimoto’s disease (autoimmune thyroiditis)

The most common type of hyperthyroidism, caused by the immune system attacking the thyroid tissue.

While various factors can cause thyroid problems, one of the most common is autoimmune disease in which the immune system attacks the body.

Hyperthyroidism

An overactive thyroid, or excessive production of thyroid hormones, leading to increased metabolic activity. Symptoms may include insomnia, feeling warm, increased sweating, frequent bowel movements or diarrhea, rapid heart rate, heart palpitations, high blood pressure, tremors, anxiety, increased appetite, weight loss, and decreased menstrual flow in women.

Grave’s disease

The most common type of hyperthyroidism, caused by an autoimmune

reaction in which antibodies bind to TSH receptors and cause the thyroid to produce excessive hormones. Symptoms are the same as those listed above, plus bulging of the eyes and thickening of the skin on the lower legs.

Thyroiditis

Inflammation of the thyroid gland, which may cause increased or decreased hormone production.

Goiter

An enlarged thyroid gland, which may be associated with either hyperthyroidism or hypothyroidism. If severe, the oversized gland may press on structures in neck, leading to difficult breathing or swallowing.

Thyroid cancer

Malignant tumors or growths in the thyroid.

Hypothyroidism and hyperthyroidism may be mild or severe. They may be asymptomatic, or symptoms may be so subtle that people don’t realize they have a problem. In addition, some of the symptoms—such as fatigue and depression—mimic those associated with HCV or its treatment.

What Causes Thyroid Problems?

While various factors can cause thyroid problems, one of the most common is autoimmune disease in which the immune system attacks the body. Normally the immune system can recognize the body’s own tissues, but when this process goes awry, B cells may produce antibodies that target parts of the body, or T-cells may mistake bodily

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cells for foreign invaders. Researchers do not know what causes the immune system to run amok, but heredity and sex hormones clearly play a role. Women are much more likely than men to develop autoimmune conditions; Grave's disease is about seven times more common in women, and the risk of Hashimoto's disease may be as much as fifty times higher.

Viruses, too, may trigger autoimmunity, which may help explain why autoimmune conditions are common in people with HCV. Chronic hepatitis C is associated with several types of autoimmune disease including cryoglobulinemia and rheumatoid arthritis, as well as thyroid disorders (see June 2003 *HCV Advocate*). As described above, autoimmune reactions can cause either hypothyroidism

(Hashimoto's disease) or hyperthyroidism (Grave's disease).

Many studies have shown that interferon therapy can cause autoimmune thyroid conditions or worsen existing thyroid disease (either hypothyroidism or hyperthyroidism). This is thought to occur because interferon stimulates immune system activity. Research shows that thyroid problems occur in about 5-15% of people taking interferon (often several months into treatment) and that levels of anti-thyroid antibodies may rise. Treatment-related thyroid disorders are seen more often in women than in men, and are more common in people with pre-existing thyroid problems or high levels of anti-thyroid antibodies. Usually thyroid dysfunction resolves when interferon is discontinued, but it is sometimes permanent (chronic autoimmune thyroiditis). In some cases, thyroid problems develop after interferon is stopped.

Although interferon therapy is a common cause of thyroid problems in people with hepatitis C, research indicates that HCV itself can trigger thyroid disorders. Several studies have shown that thyroid dysfunction is more prevalent in HCV positive people than in HCV negative people, even among those not receiving treatment. Dr. Luisa Fernandez-Soto and colleagues compared patients being treated with interferon for hepatitis B or C; they found that anti-thyroid antibodies were about four times more common in people with HCV than in those with HBV, and at the end of treatment people with HCV were four times more likely to have thyroid dysfunction. However, because some HBV patients being treated with interferon do develop thyroid problems, HCV can't be given all the blame. Importantly, HIV infection is also associated with thyroid disorders, so HCV/HIV

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coinfecting people may be at even greater risk.

Diagnosis and Management

Hypothyroidism and hyperthyroidism are diagnosed using tests that measure levels of TSH and thyroid hormones in the blood. Typically, a low TSH level indicates that the thyroid is overactive, while a high level points to an underactive thyroid. These tests are important because thyroid dysfunction is so often asymptomatic. Other tests measure the level of anti-thyroid antibodies in the blood.

Before starting interferon, all people with HCV should have their levels of TSH and thyroid hormones measured, both to establish a baseline and to detect subclinical thyroid dysfunction. Tests of anti-thyroid antibodies can help predict whether thyroid problems will occur during treatment; most studies show that people with higher antibody levels are more likely to develop autoimmune thyroid disease. Once interferon therapy is started, thyroid function should be monitored regularly, about once per month. Some doctors also recommend that thyroid tests should be done periodically even after treatment is completed.

Hypothyroidism and hyperthyroidism can both be treated. If the thyroid does not produce enough hormones, people can take a synthetic version of T4 called levothyroxine (L-thyroxine), usually one pill per day. Some trial and error may be required over a few weeks or months to determine the proper dose. Treatment may be temporary (for example, if a person has interferon-related thyroid dysfunction) or may be lifelong.

Treatment of hyperthyroidism is more complex. There are anti-thyroid

drugs that decrease the production of thyroid hormones (e.g., methimazole [Tapazole], propylthiouracil). But for long-term management, usually people are treated with radioactive iodine (which kills thyroid cells and causes the gland to shrink) or, less commonly, surgery to remove all or part of the thyroid (thyroidectomy). With either of these procedures, it often happens that the thyroid then becomes underactive, necessitating subsequent treatment with L-thyroxine.

Although thyroid disorders are a concern for people with hepatitis C—especially those taking interferon—it is important to remember that most people with HCV do not experience thyroid dysfunction. And with conscientious monitoring and proper treatment, hypothyroidism and hyperthyroidism are easily managed. To ensure that you get appropriate treatment, be sure to tell your doctor if you have any symptoms that may suggest a thyroid problem.

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Resources:

www.endocrineweb.com

www.thyroid.org

CLINICAL TRIALS

Evidence based medicine is derived from scientific studies conducted in a clinical trial setting. Treatment decisions are often based on the strength of the medical data obtained from clinical trials. Determining if the results of a study are valid can be challenging, and it is important to scrutinize any data before making treatment decisions. Below are some common types of studies and important information to consider when interpreting data. For more information on clinical trials and understanding medical research, please read HCSP's *A Guide to Understanding Clinical Trials and Medical Treatment in Hepatitis C*.

As-Treated—

data analyzed from a clinical trial that only includes participants who successfully completed a course of treatment.

Double-Blinded Study—

neither the study participants nor the researchers administering the treatment know who is receiving what drug.

Intent-to-Treat Study—

data analyzed from a clinical trial that includes all participants enrolled, including those who dropped out due to treatment failure or side effects.

Prospective Study—

a clinical trial in which participants are selected and their progression is followed over time. The most reliable research comes from prospective studies.

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Differences in HCV between Caucasians (C) and African Americans (AA) remain controversial. Previous studies have been limited by size and heterogeneity of the populations studied. Although HCV is common in the Virginia Department of Corrections (DOC), the spectrum of liver disease in this setting has not been well characterized and offers a unique opportunity to compare the spectrum of liver disease between Caucasians and African Americans in a relatively homogeneous population. There was a poster presented titled "Comparison of HCV-related Liver Disease between Caucasians and African Americans." The aim of this study was to describe the biochemical, virologic, and histologic spectrum of HCV in the DOC. A retrospective analysis of consecutive inmates biopsied for chronic HCV between October 1998 and July 2002 was performed. All patients included were anti-HCV positive, had a platelet count > 70,000, an INR (international normalized ratio – anticoagulatory factor) < 1.4, and no evidence of hepatic decompensation. Patients were excluded from analysis if they were HIV positive, HBV SAg positive, had evidence of other liver disease, or creatinine > 2.0 mg/dl. HCV RNA and genotyping (GT) were obtained at time of biopsy, and liver histology was assessed by Knodell histologic activity index (HAI) with histologically significant disease defined as total HAI > 4 or any degree of fibrosis and advanced disease as presence of bridging fibrosis (BF) or cirrhosis (Cx).

Three hundred and two inmates meeting the criteria were analyzed. The mean age was 41, 91% were male and 51% Caucasian. The

mean ALT was 94 U/l and 49% had a normal ALT at the time of biopsy. HCV RNA was positive in all tested and 80% were genotype 1. The total HAI was 7.03: 85% had significant hepatitis and 24% had advanced fibrosis.

When stratified by race, African Americans were more likely to be infected with genotype 1 (94% vs. 67%; $p < .001$) and have lower ALT (79 U/l vs. 106 U/l; $p = .01$) with similar overall HAI (6.99 vs. 7.59; $p = .09$) compared to Caucasians. While African Americans had slightly lower fibrosis scores, there were no differences in the percentage with advanced fibrosis (22% vs. 28%). Those with mild disease (HAI < 5) had lower ALT values and a higher percentage had normal ALT (70 vs. 46; $p = .004$) compared to those with significant disease. The sensitivity, specificity, positive and negative predictive values for a normal ALT to predict mild disease were 70%, 53%, 22% and 90%; those for an elevated ALT to predict significant histology were 90%, 21%, 53%, and 69%, respectively.

The conclusion of this study is that significant hepatitis is seen in the majority of inmates with HCV, and 24% have advanced fibrosis. There were no clinically significant differences between Caucasians and African Americans in this study. Because ALT has poor accuracy, liver biopsy is essential to identify those with significant or advanced histopathology who might benefit from anti-HCV therapy.

Minority populations in the US are disproportionately affected by hepatitis C virus (HCV), with estimated seroprevalences of 2.1% in Hispanics, 3.2% in African-Americans, and 1.5% in whites. Several studies have reported that African-Americans do not respond to treatment of chronic HCV infection with

the same efficacy as whites. Prior to this DDW Conference there has been little published data evaluating the response rate of Hispanics to HCV treatment. In a poster titled "Racial Differences in Treatment Response to Hepatitis C Virus in a Large Urban Health System" the researchers retrospectively reviewed all patients who completed treatment for HCV in one institution from January 1, 2000 until October 31, 2002. Data regarding self-reported demographics and virologic response were obtained via retrospective electronic chart review. HIV-positive patients and those with Childs class B or C were either not treated or excluded from analysis. Patients received several different regimens of interferon and ribavirin for either 24 weeks (non-genotype 1) or 48 weeks (genotype 1). Those with an end of treatment sustained virologic response (SVR) returned at 6 months for follow-up viral load test. Fifty of 68 patients who began treatment finished the intended duration of therapy. The racial distribution of this group was 54% white, 36% Hispanic, 6% African-American, and 4% Asian. White and Hispanic groups had similar age and genotype 1 distribution (63% vs. 61.1%). Gender distribution revealed a male: female ratio of 2:1 in whites and 1:2 in Hispanics. In an intention-to-treat analysis, overall SVR was 48.7% for white patients and 45.4% for Hispanic patients ($p = 0.86$). The SVR of patients who completed therapy was 70.4% white and 55.6% Hispanic ($p = 0.30$). No African-American patient responded to treatment. These preliminary data suggest that, in this patient population, Hispanic and white patients have similar response rates to HCV treatment.



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you avoid chemical hair treatments and tight braiding during your treatment as this can place further stress on hair.

HEADACHES

Avoid loud noises, bright lights, strong odors, and perfumes. Should you develop a severe headache, put yourself into a darkened room with a warm moist cloth on your forehead. Flexible gel packs (frozen) and frozen bags of peas work well—the bags of peas will mold to your head! Consult with your physician about headaches that do not respond to self-help measures.

Cold Sores

Some patients complain of frequent cold sores. L-lysine taken at the onset of an outbreak can help to prevent or lessen the severity of the outbreak. Mellaluca (tea tree oil) lip gel is also helpful as is *Abreva*, and other medications prescribed by your physician

NAUSEA

Ginger in any form may provide relief for nausea. This includes fresh ginger, ginger ale, ginger snaps, and ginger tea. *Spice Hunter* makes crystallized ginger that you can break into small bites and carry with you. Another ginger product available at health food stores is *Solaray Ginger Tips*. Ginger may also help decrease joint inflammation in a manner similar to that of Motrin or other non-steroidal anti-inflammatory medications. You might also try *Bonine* or motion sickness wrist bands, found in the motion sickness section of the market or drugstore. You may consider contacting your physician for anti-nausea prescription medication.

INSOMNIA

Should you develop insomnia, contact your physician. Avoid exercise prior to bedtime. Try a hot bath or drink warm milk or chamomile tea. Avoid any sleep aids that contain valerian root, kava kava or black cohosh as these herbs can be toxic to your liver.

PHOTOSENSITIVITY

Some people report sun-sensitivity and worsening of skin conditions from ribavirin.

Avoid sun exposure. For those times when sun-exposure is unavoidable, wear a wide-brimmed hat, long sleeve cotton shirts, long pants, socks and apply sunscreen to exposed skin (30 - 45 SPF). PABA-free sunscreen is recommended as some patients may be allergic to the PABA. Regularly reapply sunscreen, especially as you perspire since sunscreen wears off. Remember to cover those little “out of the way” places, such as behind your ears, back of your neck, backs of your hands, and tops of your feet if you wear sandals.

RASHES/ITCHING

Treatment may cause very dry skin. Winter weather may be especially drying. Try using a humidifier. Take warm (not hot) baths or showers. Avoid perfumed or deodorant soaps as these can further irritate your skin. *Aveeno* and *Cetaphil* make a variety of products, including cleansers, moisturizers, and anti-itch remedies. Use of a moisturizing cream or lotion is essential. Consult with your physician if a rash develops or if itching interferes with your comfort or sleep.

RAW/UNDERCOOKED OYSTERS & SHELLFISH

Vibrio vulnificus is a bacterium found in raw shellfish and can cause disease in those who eat contaminated seafood or have an open wound that is exposed to seawater. Among healthy people, infection with this bacterium can cause vomiting, diarrhea and abdominal pain. In those with chronic liver disease, *V. vulnificus* can infect the bloodstream, causing a severe or life-threatening illness. Septicemia from *V. vulnificus* is fatal approximately 50% of the time.

Do not eat raw oysters or other raw shellfish. Cook shellfish in the shell. Do not eat any shellfish that do not open during the cooking process. Boil shucked oysters at least 3 minutes, or fry them in oil at least 10 minutes at 375 degrees.

Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood. Eat shellfish promptly after cooking and refrigerate all leftovers. Avoid exposure of open wounds or broken skin to warm salt or brackish water, or to raw shellfish harvested from such waters. Use gloves when handling raw shellfish.

SHORTNESS OF BREATH

Call your doctor immediately. It is important to let your care provider determine the cause of shortness of breath. Some shortness of breath is a common side effect of treatment.

SUPPORT GROUPS

Consider attending a support group. Many support groups offer free information and support to patients and their families. Remember that success in making major health changes may be easier with support from others.

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HEALTHWISE

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THYROID

The use of interferon has been associated with hypothyroidism and hyperthyroidism. Symptoms of hypothyroidism include fatigue, poor memory, weakness, constipation, weight gain, muscle cramping, intolerance to cold, hoarse voice, coarse skin and brittle hair. Hypothyroidism can be treated with medication. Thyroid function usually returns to normal after treatment.

Symptoms of hyperthyroidism include anxiety, insomnia, weakness, diarrhea, weight loss, intolerance to heat, hair loss, and brittle nails. This condition may require your clinician to reduce or stop your treatment altogether in an attempt to return your thyroid function to normal.

VITAMINS

Discuss the use of vitamin and mineral supplements with your health care provider. Choose supplements that do not contain vitamin A or K in excess of the Recommended Daily Allowance (RDA) as these are fat soluble and stored in the liver. Historically, patients were advised to avoid iron containing foods (i.e., red meat, spinach) but new studies have proven that patients may eat these foods as well as take a daily allowance of iron (18mg) which is generally present in multi-vitamins **provided** the patient does not have an additional diagnosis of iron overload. Excess iron can be damaging to the liver. Always check with your physician prior to taking any iron-containing vitamins.

WEIGHT LOSS

A small amount of weight loss may occur. Try eating small frequent meals. Drink milk shakes or fruit smoothies for extra calorie consumption. Try supplementing your diet with *Ensure* or even *Slim-Fast* with soy protein. Do not use dietary supplements as your only source of nutrition. *Ensure* can replace milk on cereal or in pudding. Smoothies can include a variety of ingredients, such as nonfat yogurt, ice cream, fruit, *Ensure*, *Slim-Fast*, and powdered supplements.



CLINICAL TRIALS

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Retrospective Study—

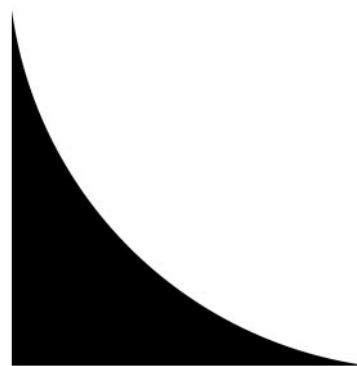
a study based on medical records, looking backward in time at events that happened in the past. These studies are prone to bias but are useful in determining what should be studied prospectively.

Sample Size—

the number of study participants. The larger the sample size the more valid the results are likely to be from a statistical standpoint.

Single-Blinded Study—

the study participants of a clinical trial do not know if they are taking an experimental treatment, a standard (control) treatment, or a placebo.



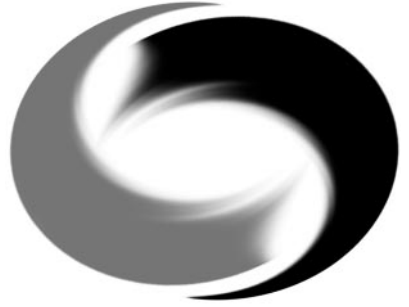
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