

REFERENCES

- A.P.A.S.L. (2007):** Hepatitis C Working Party. APASL consensus statements on the diagnosis, management and treatment of hepatitis C virus infection. *J Gastroenterol Hepatol*;22:615-33.
- Abdel Hamid M.; El Daly, M.; Molnegren, V.; et al., (2007):** Genetic diversity in hepatitis C virus in Egypt and possible association with hepatocellular carcinoma. *J Gen Virol* ; 88:1526- 1531.
- Abdelmalek, M.F.; Firpi, R.J.; Soldevila-Pico, C.; et al. (2004):** Sustained viral response to interferon and ribavirin in liver transplant recipients with recurrent hepatitis C. *Liver Transpl*; 10:199-207.
- Adinolfi, L.E.; Gambardella, M.; Andreana, A.; et al., (2001):** Steatosis accelerates the progression of liver damage of chronic hepatitis C patients and correlates with specific HCV genotype and visceral obesity. *Hepatology* ;33:1358– 1364.
- Afdhal, N.H; Dieterich, D.T.; Pocros, P.J.; et al., (2004):** Epoetin alfa maintains ribavirin dose in HCV-infected patients: A prospective, double-blind, randomized controlled study. *Gastroenterology*; 126:1302-1311.
- Afdhal, N.; Levine, R.; Brown, R.; et al., (2008):** Colchicine versus Peg-Interferon alpha 2B long term therapy: Results of the 4 year COPILOT trial [abstract]. *J Hepatol* ; 48:A3.
- Aldhahi, W. and Hamdy, O. (2003):**Adipokines, inflammation, and the endothelium in diabetes. *Curr Diab Rep*;3:293 – 298.
- Alessandra Mangia, M.D., Rosanna Santoro, Bs.D., Nicola Minerva, M.D.,Giovanni L. Ricci, M.D., Vito Carretta, M.D.,,et al., 2005** *N Engl J Med* 2005;352:2609-17.
- Alfaleh, F.Z.; Hadad, Q.; Khuroo, M.S.; et al., (2004):** Peginterferon a-2b plus ribavirin compared with interferon a-2b plus ribavirin for initial treatment of chronic hepatitis C in Saudi patients commonly infected with genotype 4. *Liver Int* ; 24: 568–74.

- Alter, H.J. and Houghton, M. (2000):** Clinical Medical Research Award. Hepatitis C virus and eliminating post-transfusion hepatitis. *Nat Med* ; 6:1082-6.
- Angulo, P. (2002):** Nonalcoholic fatty liver disease. *N Engl J Med*; 346:1221 – 31.
- Angulo, P.; Hui, J.M.; Marchesini, G.; et al., (2007):** The NAFLD fibrosis score: A noninvasive system that identifies liver fibrosis in patients with NAFLD. *Hepatology* ; 45:846-54.
- Arase, Y.; Suzuki, F.; Suzuki, Y.; et al. (2009):** Sustained virological response reduces incidence of onset of type 2 diabetes in chronic hepatitis C. *Hepatology* ; 49: 739–44.
- Armstrong, G.L.; Wasley, A.; Simard, E.P.; et al., (2006):** The prevalence of hepatitis C virus infection in the United States, 1999 through 2002. *Ann Intern Med* ; 144:705-14.
- Asselah, T.; Boyer, N.; Marcellin, P, et al., 2003** Steatosis in Hepatitis C: What Does It Mean? *Current Hepatitis Reports* 2:137–144 .
- Bacon, B.; Regev, A.; Ghalib. R.; et al., (2007):** The direct trial (daily-dose consensus interferon and ribavirin: Efficacy of combined therapy): Treatment of non-responders to previous pegylated interferon plus ribavirin: Sustained virologic response data [abstract], *Hepatology* ; 46:A168.
- Banerjee, D.; Williams, E.V.; Iltott, J.; et al., (2001):** Obesity predisposes to increased drainage following axillary node clearance: a prospective audit. *Ann R Coll Surg Engl*; 83:268–71.
- Barba, G.; Harper, F.; Harada, T., et al., (1997):** Hepatitis C virus core protein shows a cytoplasmic localization and associates to cellular lipid storage droplets. *Proc Natl Acad Sci U S A* ; 94:1200– 5.
- Bissell, D.M. (1999):** Sex and hepatic fibrosis. *Hepatology* ; 29:988-9.
- Boyer, N. and Marcellin P. (2000):** Pathogenesis, diagnosis and management of hepatitis C. *J Hepatol* ; 32 (suppl 1):98–112.

- Bressler, B.L.;Guindi, M.; Tomlinson, G.; et al., (2003):**Heathcote J. High bodymass index is an independent risk factor for response to antiviraltreatment in chronic hepatitis C. *Hepatology*; 38: 639-644.
- Brok, J.;Gluud, L.L. andGluud, C. (2010):** Meta-analysis: Ribavirin plus interferon vs. interferonmonotherapy for chronic hepatitis C—an updated Cochrane review. *AlimentPharmacolTher*;32:840-50.
- Bruno, S.; Crosignani, A.; Maisonneuve, P.;et al., (2007a):** Hepatitis C virus genotype 1b as a major risk factor associated with hepatocellular carcinoma in patients with cirrhosis: a seventeen-year prospective cohort study. *Hepatology* ;46:1350-1356.
- Bruno, S.; Stroffolini, T.; Colombo, M.; et al., (2007b):** Sustained virological response to interferon-alpha is associated with improved outcome in HCV-related cirrhosis: A retrospective study. *Hepatology* ; 45:579-87.
- Burnt, E.M.; Janney , C.G. and Di-Bisceglie, A.M. (1999):** Non-alcoholic steatohepatitis, aproposal for grading and histological lesions. *AM.J.Gastroenterology* 94 -2467-2474.
- Brunt, E.M. (2001):** Nonalcoholic steatohepatitis: Definition and pathology. *Semin Liver Dis.*; 21:3-6.
- Burt, A.D.; Mutton, A.and Day, C.P. (1998):** Diagnosis and Interpretation of steatosis and steatohepatitis .*Semin Diagn pathol*; 15:246-58.
- Cannon, C.P. (2008):** Mixed dyslipidemia, metabolic syndrome, diabetes mellitus, and cardiovascular disease: clinical implications. *Am J Cardiol*; 102: 5L–9L.
- Cano, O.; Almenar, L.; Martinez-Dolz, L.; et al., (2007):** Course of patients with chronic hepatitis C virus infection undergoing heart transplantation. *Transplant Proc* ; 39:2353-4.
- Castera, L.;Hezode, C.;Roudot-Thoraval, F.; et al., (2003):** Worsening of steatosis is an independent factor of fibrosis progression in untreated patients with chronic hepatitis C and paired liver biopsies.*Gut*;52:288– 92.
- Castera, L.; Hezode, C.; Roudot-Thoraval, F; et al., (2004):** Effect of antiviral treatment on evolution of liver steatosis in patients with chronic hepatitis C:

indirect evidence of a role of hepatitis C virus genotype 3 in steatosis. *Gut*;53:420–4.

- Chamberlain, R.; Adams, N.; Saeed, A.A.; et al., (1997):** Complete nucleotide sequence of a type 4 hepatitis C virus variant, the predominant genotype in the Middle East. *J Gen Virol* ;78:1341-1347.
- Charlton, M.; Angulo, P.; Chalasani, N.; et al., (2008):** Low circulating levels of dehydroepiandrosterone in histologically advanced nonalcoholic fatty liver disease. *Hepatology* ; 47:484-92.
- Cholet, F.; Noursa, J.B.; Richercoeur; et al., 2004** Factors associated with liver steatosis and fibrosis in chronic hepatitis C patients. *Gastroenterol Clin Biol.* 3:272-8.
- Chung, R.T.; Gale, Jr. M.; Polyak, S.J.; et al., (2008):** Mechanisms of action of interferon and ribavirin in chronic hepatitis C: Summary of a workshop. *Hepatology* ; 47:306-20.
- Clark, J.M. (2006):** Weight loss as a treatment for nonalcoholic fatty liver disease. *J Clin Gastroenterol*; 40 (Suppl 1):S39-S43.
- Clouston, A.D.; Jonsson, J.R.; Purdie, D.M.; et al. (2001):** Steatosis and chronic hepatitis C: analysis of fibrosis and stellate cell activation. *J Hepatol* ;34:314–20.
- Codes, L.; Asselah, T.; Cazals-Hatem, D.; et al., (2007):** Liver fibrosis in women with chronic hepatitis C: Evidence for the negative role of the menopause and steatosis and the potential benefit of hormone replacement therapy. *Gut* ; 56:390-5.
- Conte, D.; Fraquelli, M.; Prati, D.; et al., (2000):** Prevalence and clinical course of chronic hepatitis C virus (HCV) infection and rate of HCV vertical transmission in a cohort of 15,250 pregnant women *Hepatology*; 31:751-5.
- Cortez-Pinto, H.; Baptista, A.; Camilo, M. and De Moura, M. (2003):** Nonalcoholic steatohepatitis a long-term follow-up study: Comparison with alcoholic hepatitis in ambulatory and hospitalized patients. *Dig Dis Sci* ; 48:1909-13.

- Dai, C.Y.; Huang, J.F.; Hsieh, M.Y.; et al., (2009):** Insulin resistance predicts response to peginterferon-alpha/ribavirin combination therapy in chronic hepatitis C patients. *J Hepatol* ; 50: 712–8.
- Dalgard, O. and Mangia, A. (2006):** Short-term therapy for patients with hepatitis C virus genotype 2 or 3 infection. *Drugs* ; 66:1807-15.
- Davis, G.L. (2002):** Monitoring of viral levels during therapy of hepatitis C. *Hepatology* ; 36:S145-51.
- Day, C.P.; James, O.F. (1998):** Steatohepatitis: a tale of two “hits”? *Gastroenterology*; 114:842–5.
- Day, C.P. (2006):** From fat to inflammation. *Gastroenterology*; 130:207–10.
- De Carli, G.; Puro, V. and Ippolito, G. (2003):** Risk of hepatitis C virus transmission following percutaneous exposure in healthcare workers. *Infection* ; 31 (Suppl 2): 22-7.
- Del Campo, J.A. and Romero-Gómez, M. (2009):** Steatosis and insulin resistance in hepatitis C: a way out for the virus? *World J Gastroenterol* ; 15: 5014–9.
- Derbala, M.F.; Al Kaabi, S.R.; El Dweik, N.Z.; et al., (2006):** Treatment of hepatitis C virus genotype 4 with peginterferon alfa-2a: impact of bilharziasis and fibrosis stage. *World J Gastroenterol* ; 12: 5692–8.
- Desmond, C.P.; Roberts, S.K.; Dudley, F.; et al., (2006):** Sustained virological response rates and durability of the response to interferon-based therapies in hepatitis C patients treated in the clinical setting. *J Viral Hepat*; 13:311-15.
- Deuffic-Burban, S.; et al. (2006):** Expected increase in hepatitis C related mortality in Egypt due to pre-2000 infections. *J Hepatol.*, 44:455–61.
- Di Bisceglie, A.M.; Bonkovsky, H.L.; Chopra, S., et al., (2000):** Iron reduction as an adjuvant to interferon therapy in patients with chronic hepatitis C who have previously not responded to interferon: A multicenter, prospective, randomized, controlled trial. *Hepatology* ; 32:135-8.
- Di Bisceglie, A.M.; Everson, G.T.; Linsay, K.L.; et al., (2007):** Prolonged antiviral therapy with peginterferon to prevent complications of advanced liver disease associated with hepatitis C: Results of the hepatitis C antiviral long-term

treatment against cirrhosis (HALT-C) trial [abstract]. *Hepatology* ; 46:ALB1.

Dieterich, D.T.; Rizzetto, M. and Manns, M.P. (2009): Management of chronic hepatitis C patients who have relapsed or not responded to pegylated interferon alfa plus ribavirin. *J Viral Hepat*; 16:833-43.

Dixon, J.; Bhathal, P. and O'Brien, P. (2001): Nonalcoholic fatty liver disease: Predictors of nonalcoholic steatohepatitis and liver fibrosis in the severely obese. *Gastroenterology* ; 121:91-100.

Dubuisson, J. (2007): Hepatitis C virus proteins. *World J Gastroenterol* ; 13:2406-15.

Dusheiko, G.M.; Hezode, C. Pol, S.; et al., (2008): Treatment of chronic hepatitis C with telaprevir (TVR) in combination with peginterferon-alpha-2a with or without ribavirin: Further interim analysis results of the PROVE2 study [abstract]. *J Hepatol* ; 48:A58.

Egyptian Ministry of Health (2007): Annual report. 2007 Available at [http:// www.mohp.gov.eg/ Main.asp](http://www.mohp.gov.eg/Main.asp). Accessed: 12 October.

El –Katsha, S.; Labeeb, S.; Watts, S.; et al., (2006): Informal health providers and the transmission of hepatitis C virus: pilot study in two Egyptian villages. *East Mediterr Health J*; 12: 758–67.

El-Ray, A.; Asselah, T.; Ripault, M-P.; et al., (2006): Rapid drop of HCV RNA level under therapy and better sustained response rate in Egyptian patients versus non-Egyptian patients with HCV genotype 4,. *EASL, Austria*, abstract 571.

El-Serag, H.B. (2002): Hepatocellular carcinoma and hepatitis C in the United States. *Hepatology*; 36:S74– 83.

El-Serag, H.B.; Tran, T. and Everhart, J.E. (2004): Diabetes increases the risk of chronic liver disease and hepatocellular carcinoma. *Gastroenterology*; 126:460-8.

El-Zayadi, A-R.; Attia, M.; Barakat, E.M.F.; et al., (2005): Response of hepatitis C genotype-4 naive patients to 24 weeks of peginterferon- a2b/ribavirin or

induction-dose interferon-a2b/ ribavirin/amantadine: a non-randomized controlled study. *Am J Gastroenterol* 2005; 100: 2447–52.

El-Zayadi, A.; Barakat, E.; Hamdy, H.; et al., 2006 Hepatic steatosis among HCV genotype 4 Patients and its impact on response to interferon therapy. *Liver International journal of IASL*. Volume 26. Abstract 213.

El-Zayadi, A.; Attia, M.; Barakat, E.M.; et al., (2007): Non-alcoholic fatty liver disease in patients with HCV genotype 4. *Gut*;56:1170-1171.

El-Zayadi, A.R.; Attia, M.; Barakat, E.M.F. ; et al. (2008): Hepatic steatosis in genotype 4 infected patients. *Arab J. Gastroenterology* 14 (26) :4120 -4126.

Esmat, G.H.; Abouzied, A.; Abdel-Hamid, M.; et al., (2003): Results of a randomized clinical trial of genotype-4 infected subjects when treated with standard or pegylated interferon alfa-2b in combination with ribavirin. *Hepatology*; 38 (Suppl.): 314A–5A (abstract).

Esmat, G.; Metwally, M.; Zalata, K.R.; et al., (2007): Evaluation of serum biomarkers of fibrosis and injury in Egyptian patients with chronic hepatitis C. *J Hepatol*; 46: 620–7.

Esmat, G.; Wafaa El Akel, M.; Metwally, A.; et al. (2009): Improvement of steatosis after interferon therapy in HCV genotype 4 is related to weight loss. *Indian J Gastroenterol*;28 (2):45–48.

Esteban, J. I.; Sauleda, S. and Quer, J. (2008): The changing epidemiology of hepatitis C virus infection in Europe. *J Hepatol* ; 48:148-62.

Everson, G.T. (2004): Treatment of chronic hepatitis C in patients with decompensated cirrhosis. *Rev Gastroenterol Disord.* ;4 Suppl 1:S31-8.

Everson, G.Y.; Trotter, J.; Forman, L.; et al., (2005): Treatment of advanced hepatitis C with a low accelerating dosage regimen of antiviral therapy. *Hepatology*; 42:255-62.

Everson, G.T.; Hoefs, J.C.; Seeff, L.B.; et al., (2006): Impact of disease severity on outcome of antiviral therapy for chronic hepatitis C: Lessons from the HALT-C trial. *Hepatology* ; 44:1675-84.

- Fabrizi, F.; Martin, P. and Ponticelli, C. (2001):** Hepatitis C virus infection and renal transplantation. *Am J Kidney Dis* ; 38:919-34.
- Fabrizi, F.; Dulai, G.; Dixit, V.; et al., (2003):** Meta-analysis: interferon for the treatment of chronic hepatitis C in dialysis patients. *Aliment Pharmacol Ther.*;18 (11-12):1071-81.
- Fabrizi, F.; Martin, P.; Dixit, V.; et al., (2004):** Meta-analysis: Effect of hepatitis C virus infection on mortality in dialysis. *Aliment Pharmacol Ther* ; 20:1271-7.
- Farci, P.; Shimoda, A.; Coiana, A.; et al., (2000):** The outcome of acute hepatitis C predicted by the evolution of the viral quasispecies. *Science* ; 288:339-44.
- Fartoux, L.;Chazouilleres, O.;Wendum, D.; et al., (2005)a:**Impact of steatosis on progression of fibrosis in patients with mild hepatitis C. *Hepatology*;41 (1):82–7.
- Fartoux, L.; Poujol-Robert, A.; Guechot, J.; et al., (2005)b:**Insulin resistance is a cause of steatosis and fibrosis progression in chronic hepatitis C. *Gut* ;54:1003–1008.
- Fattovich, G.; Covolo, L.; Pasino, M.; et al., (2011):** The homeostasis model of assessment of insulin resistance score is not predictive of sustained virological response in chronic hepatitis C patients. *Liver Int* ; 31: 66–74.
- Ferenci, P.;Lafer, I. H. and Austrian Hepatitis Study Group et al., (2008):**Peginterferon alfa-2a and ribavirin for 24 weeks in hepatitis C type 1 and 4 patients with rapid virological response. *Gastroenterology*;135: 451–8.
- Flisiak, R.; Feinman, S.V.; Jablkowski, M.: et al., (2008):** Efficacy and safety of increasing doses of the cyclophilin inhibitor DEBIO 025 in combination with pegylated interferon alpha-1a in treatment naive chronic HCV patients [abstract]. *J Hepatol* ; 48:A143.
- Forman, L.M.; Lewis, J.D.; Berlin, J.A.; et al., (2002):** The association between hepatitis C infection and survival after orthotopic liver transplantation. *Gastroenterology*. Apr ;122 (4):889-96.

- Frank, C.; Mohamed, M.K.; Strickland, G.T.; et al., (2000):** The role of parenteral antischistosomal therapy in the spread of hepatitis C virus in Egypt. *Lancet* ; 355:887-91.
- Freeman, A.J.; Dore, G.J.; Law, M.G.; et al., (2001):** Estimating progression to cirrhosis in chronic hepatitis C virus infection. *Hepatology*; 34:809-16
- Fried, M.W, Shiffman, M.L,Reddy, K.R, et al. (2002) :**peg-interferon-2b plus ribavirin for chronic hepatitis c virus infection. *N Eng J Med*;347:975-82.
- Fried, M.W.; Jensen, D.M.; Rodriguez-Torres, M.; et al., (2008):** Improved outcomes in patients with hepatitis C with difficult-to-treat characteristics Randomized study of higher doses of peginterferon alpha-2a and ribavirin. *Hepatology*; 48:1033-43.
- Gane, E. (2003):** The natural history and outcome of liver transplantation in hepatitis C virus-infected recipients. *Liver Transpl* ; 9:S28-34.
- Gary-Bobo, M.; Elachouri, G.; Gallas, J.F.; et al., (2007):** Rimonabant reduces obesity-associated hepatic steatosis and features of metabolic syndrome in obese Zucker fa/fa rats. *Hepatology* ; 46:122-9.
- Gasink, L.B.; Blumberg, E.A.; Localio, A.R.; et al., (2006):** Hepatitis C virus seropositivity in organ donors and survival in heart transplant recipients. *JAMA* ; 296:1843-50.
- Genovese, D.; Dettori, S.; Argentini, C.; et al., (2005):** Molecular epidemiology of hepatitis C virus genotype 4 isolates in Egypt and analysis of the variability of envelope proteins E1 and E2 in patients with chronic hepatitis. *J Clin Microbiol* ;43:1902-1909.
- Giordanino C,Bugianesi E,Smedile A,Ciancio A, et al.2008 :**incidence of type 2 diabetes mellitus and glucose abnormalities in patients with chronic hepatitis C infection by response to treatment: results of a cohort study.*Am J Gastroenterology* 2008 Oct;103(10):2481-7. Epub 2008 Aug 8.
- Giannini, E.;Mastracci, L.;Botta, F.;et al., (2001):** Liver iron accumulation in chronic hepatitis C patients without HFE mutations: relationships with

- histological damage, viral load and genotype and alpha-glutathione S-transferase levels. *Eur J. Gastroenterol. Hepatol*; **13**: 1355-1361.,
- Gibb, D.M.; Goodall, R.L.; Dunn, D.T.; et al., (2000):** Mother-to-child transmission of hepatitis C virus: evidence for peripartum transmission. *Lancet* ; 356:904-7., A
- Gochee, P.A.; Jonsson, J.R.; Clouston, A.D.; et al., (2003):** Steatosis in chronic hepatitis C: association with increased messenger RNA expression of collagen I, tumor necrosis factor-alpha and cytochrome P450 2E1. *J Gastroenterol Hepatol* ;18:386–92.
- Gordon, A.; McLean, C.A.; Pedersen, J.S.; et al., 2005**Hepatic steatosis in chronic hepatitis B and C: Predictors, distribution and effect on fibrosis.*J Hepatol* 33:04-040.
- Hadziyannis, S.J.; Sette, H.; Morgan, T.R.; et al., (2004):** Peginterferon-alpha2a and ribavirin combination therapy in chronic hepatitis C: A randomized study of treatment duration and ribavirin dose. *Ann Intern Med*; 140:346-55.
- Hanouneh, I.A.; Feldstein, A.; Lopez, R.; et al. (2008a):** Clinical significance of metabolic syndrome in the setting of chronic hepatitis C virus infection. *Clin.GastroenterolHepatol*; 6:584-9.
- Hanouneh, I.A.; Miller, C.; Aucejo, F.; et al., (2008b):** Recurrent hepatitis C after liver transplantation: On-treatment prediction of response to peginterferon/ribavirin therapy. *Liver Transpl* ; 14:53-8.
- Harrison, S.A.; Brunt, E.M.; Neuschwander-Tetri,B.A.; et al., (2005):** Effect of significant histologic steatosis or steatohepatitis on response to antiviral therapy in patients with chronic hepatitis C. *Clin Gastroenterol Hepatol*;3 (6):604–9.
- Hasan, F.; Asker, H.; Al-Khaldi, J.;et al., (2004):**Peginterferonalfa-2b plus ribavirin for the treatment of chronic hepatitis C genotype 4. *Am J Gastroenterol*. 99 (9):1733-1737.
- Heathcote, J. and Main, J. (2005):** Treatment of hepatitis C. *J Viral Hepat*; 12: 223-235.

- Hezode, C.; Roudot-Thoraval, F.; Zafrani, E-S; et al., (2004):** Different mechanisms of steatosis in hepatitis C virus genotypes I and 3 infections. *J Viral Hep* ;11:455–8.
- Hezode. C.; Zafrani, E.S.; Roudot-Thoraval, F.; et al., (2008):** Daily cannabis use: A novel risk factor of steatosis severity in patients with chronic hepatitis C. *Gastroenterology* ; 134:432-9.
- Hickman, I.J.; Clouston, A.D.; Macdonald, G.A.; et al., (2002):** Effect of weight reduction on liver histology and biochemistry in patients with chronic hepatitis C. *Gut* ;51:89 – 94.
- Hickman, I.J.; Powell, E.E.; Prins, J.B.; et al., (2003):** In overweight patients with chronic hepatitis C, circulating insulin is associated with hepatic fibrosis: implications for therapy. *J Hepatol* ; 39:1042– 8.
- Honda, M.; Sakai, A.; Hokuriku Liver Study Group et al., (2010):** Hepatic ISG expression is associated with genetic variation in interleukin 28B and the outcome of IFN therapy for chronic hepatitis C. *Gastroenterology*; 139: 499–509.
- Hoofnagle, J.H. (2002):** Course and Outcome of Hepatitis C *Hepatology* 36:S21-S29.
- Hope, R.G. and McLauchlan, J. (2000):** Sequence motifs required for lipid droplet association and protein stability are unique to the hepatitis C virus core protein. *J Gen Virol* ;81:1913–25.
- Hu, K.Q.; Currie, S.L.; Shen, H.; et al., (2007):** Clinical implications of hepatic steatosis in patients with chronic hepatitis C: A multicenter study of U.S. veterans. *Dig Dis Sci* ; 52:570-8.
- Hu, K.Q.; Kyulo, N.L.; Esrailian, E.; et al., 2008**Overweight and obesity, hepatic steatosis, and progression of chronic hepatitis C: a retrospective study in a large cohort of patients in the United States. *J Hepatol* 40:147-154
- Hui, C.K.; Monto, A.; Belaye, T.;et al., (2003a):** Outcomes of interferon alpha and ribavirin treatment for chronic hepatitis C in patients with normal serum aminotransaminases. *Gut.* ;52 (11):1644-8.

- Hui, J.M.; Sud, A.; Farrell, G.C.; et al., (2003b):** Insulin resistance is associated with chronic hepatitis C virus infection and fibrosis progression [corrected]. *Gastroenterology* ;125:1695–704.
- Hwang, L.Y.; Kramer, J.R.; Troisi, C.; et al., (2006):** Relationship of cosmetic procedures and drug use to hepatitis C and hepatitis B virus infections in a low-risk population. *Hepatology* ; 44:341-51.
- Ikeda, K.; Kobayashi, M.; Someya, T.; et al., (2002):** Influence of hepatitis C virus subtype on hepatocellular carcinogenesis: A multivariate analysis of a retrospective cohort of 593 patients with cirrhosis. *Intervirology*;45:71-8.
- Ikeda M, Abe K, Yamada M, Dansako H, et al., 2006** Different anti-HCV profiles of satins and their potential for combination therapy with interferon. *Hepatology* 2006; 44: 117-125.
- Inoue, H.; Ogawa, W.; Ozaki, M.; et al., (2004):** Role of STAT-3 in regulation of hepatic gluconeogenic genes and carbohydrate metabolism in vivo. *Nat Med*;10:168–74.
- Ishak, K.; Baptista, A. and Bianchi. (1995):** Grading and staging of chronic hepatitis. *J. Hepatology*; 22: 699 -699.
- Jacobson, I.M.; Ahmed, F.; Russo, M.W.; et al., (2004):** Interferon alfa-2b [correction of alpha-2b] and ribavirin for patients with chronic hepatitis C and normal ALT. *Am J Gastroenterol. Sep*;99 (9):1700-5.
- Jensen, D.M.; Freilich, B.; Andreone, P.; et al., (2007):** Pegylated interferon alfa-2a (40KD) plus ribavirin (RBV) in prior non-responders to pegylated interferon alfa-2a (12KD)/RBV: Final efficacy and safety outcomes of the repeat study [abstract]. *Hepatology* ; 46:ALB4.
- Jessner, W.; Gschwantler, M.; Formann, E.; et al., (2008):** Very early viral kinetics on interferon treatment in chronic hepatitis C virus genotype 4 infection. *Antiviral Ther* ; 13: 581–9.
- Jou, J.; Choi, S.S. and Diehl, A.M. (2008):** Mechanisms of disease progression in nonalcoholic fatty liver disease. *Semin Liver Dis* 2008; 28:370–9.

- Kalia, H.; Lopez, P.M. and Martin, P. (2007):** Treatment of HCV in patients with renal failure. Arch Med Res ; 38:628-33.
- Kalinina, O.; Norder, H.; Mukomolov, S.; et al., (2002):** A natural intergenotypic recombinant of hepatitis C virus identified in St. Petersburg. J Virol ; 76:4034-43.
- Kamada, Y.; Tamura, S.; Kiso, S.; et al., (2003):** Enhanced carbon tetrachloride-induced liver fibrosis in mice lacking adiponectin. Gastroenterology;125:1796 –807.
- Kamal, S.M.; Rasenack, J.W.; Bianchi, L.; et al., (2001):** Acute hepatitis C without and with schistosomiasis: correlation with hepatitis C-specific CD4 (1) T-cell and cytokine response. Gastroenterology ; 121: 646–56.
- Kamal, S.M.; Ismail, A.; Graham, C.S.; et al., (2004):** Pegylated interferon a therapy in acute hepatitis C: relation to hepatitis C virus specific T cell response kinetics. Hepatology; 39: 1721–31.
- Kamal, S.M.; El-Tawil, A.A.; Nakano, T.; et al., (2005):** Peginterferon alpha- 2b and ribavirin therapy in chronic hepatitis C genotype 4: impact of treatment duration and viral kinetics on sustained virological response; 54: 858–66.
- Kamal, S.M.; Turner, B.; He, Q.; et al., (2006):** Progression of fibrosis in hepatitis C with and without schistosomiasis: correlation with serum markers of fibrosis. Hepatology ; 43: 771–9.
- Kamal, S.; Kamary, S.; Shardell, M.; et al., (2007):** Pegylated interferon alpha-2b plus ribavirin in patients with genotype 4 chronic hepatitis C: the role of rapid and early virologic response. Hepatology; 46: 1732–40.
- Kamal, S.M. and Nasser, I.A. (2008):** Hepatitis C genotype 4: What we know and what we don't yet know. Hepatology ; 47:1371-83.
- Kamal, S.M.; Ahmed, A., Mahmoud, S.; et al., (2011):** Enhanced efficacy of pegylated interferon alpha-2a over pegylated interferon and ribavirin in chronic hepatitis C genotype 4A randomized trial and quality of life analysis (pages 401–411), Liver international; 31 (4) :401-411

- Kaplan, L.M. (1998):** Leptin, obesity, and liver disease. *Gastroenterology*; 115:997– 1001.
- Kawaguchi, T.; Yoshida, T.; Harada, M.; et al., (2004):** Hepatitis C virus down-regulates insulin receptor substrates 1 and 2 through up-regulation of suppressor of cytokine signaling 3. *Am J Pathol* ;165:1499–508.
- Kawaguchi, T.; Ide, T.; Taniguchi, E.; et al., (2007):** Clearance of HCV improves insulin resistance, betacellfunction, and hepatic expression of insulin receptor substrate 1 and 2. *Am J Gastroenterol*; 102:570–6.
- Kazemi-Shirazi, L.; Datz, C.; Maier-Dobersberger, T.; et al., (1999):** The relation of iron status and hemochromatosis gene mutations in patients with chronic hepatitis C. *Gastroenterology* ; 116:127-34.
- Kelen, G.D.; Green, G.B.; Purcell, R.H; et al., (1992):**Hepatitis B and hepatitis C in emergency department patients. *N Engl J Med* ; 326:1399-404.
- Khattab MA, Abdel-fattah et al., 2010:**hepatic steatosis in genotype 4 chronic hepatitis c patients:implication for therapy.*J clin Gastroenterol* 2010 Nov-Dec,44(10):707-12
- Khuroo, M.S.; Khuroo, M.S. and Dahab, S.T. (2004):** Meta-analysis: a randomized trial of peginterferon plus ribavirin for the initial treatment of chronic hepatitis C genotype 4. *Aliment Pharmacol Ther.*; 20: 931–8.
- Kieffer, T.L.; Sarrazin, C.; Miller, J.S.; et al., (2007):** Telaprevir and pegylated interferon-alpha-2a inhibit wild-type and resistant genotype 1 hepatitis C virus replication in patients. *Hepatology* ; 46:631-9.
- Kleiner, D.E.; Brunt, E.M.; Van Natta, M.; et al., (2005):** Design and validation of a histological scoring system for nonalcoholic fatty liver disease. *Hepatology* ; 41:1313-21.
- Korey, K.; Bhan, A.K. and Chung, R.T. (2006):** Steatosis is associated with more severe fibrosis in chronic hepatitis Abstract S 1056, Digestive Disease Week (DDW 2006) Los Anglos; 20-25.
- Kumar, R.M. and Shahul, S. (1998):** Role of breast-feeding in transmission of hepatitis C virus to infants of HCV-infected mothers. *J Hepatol* ; 29:191-7.

- Kwo, P.; Lawitz, K.P.; McCone, J.; et al., (2008):** Interim results from HCV SPRINT-1: RVR/EVR from phase 2 study of boceprevir plus peginteron (peginterferon alpha-2b)/ribavirin in treatment-naive subjects with genotype-1 CHC [abstract]. *J Hepatol* ; 48:A995.
- Lalezari, J.; Gane, E.; Rodriguez-Torres, M.; et al., (2008):** Potent antiviral activity of the HCV nucleoside polymerase inhibitor R7128 500 mg BID for 28 days [abstract]. *J Hepatol* ; 48:A66.
- Larrea, E.; Garcia, N.; Qian, C.; et al., (1996):** Tumor necrosis factor alpha gene expression and the response to interferon in chronic hepatitis C. *Hepatology*; 23 (2):210–7.
- Lau, J.Y.; Davis, G.L.; Brunson, M.E.; et al., (1993):** Hepatitis C virus infection in kidney transplant recipients. *Hepatology* ; 18:1027-31.
- Leandro, G.; Mangia, A.; Hui, J.; et al., (2006):** Relationship between steatosis, inflammation, and fibrosis in chronic hepatitis C: A meta-analysis of individual patient data. *Gastroenterology*; 130 (6):1636–42.
- Lefkowitz, J.H.; Schiff, E.R.; Davis, G.L.; et al., (1993):** Pathological diagnosis of chronic hepatitis C: A multicenter comparative study with chronic hepatitis B. *Gastroenterology* ; 104:595-603.
- Liang, T.J.; Rehermann, B.; Seeff, L.B.; et al., (2000):** Pathogenesis, natural history, treatment, and prevention of hepatitis C. *Ann Intern Med* ; 132:296-305.
- Liu, C.H.; Liang, C.C.; Liu, C.J.; et al., (2010):** Pegylated interferon alpha-2a monotherapy for hemodialysis patients with acute hepatitis C. *Clin Infect Dis. Sep 1* ; 51 (5):541-9.
- Lodato, F.; Berardi, S.; Gramenzi, A.; et al., (2008):** Peg-interferon alpha-2b and ribavirin for the treatment of genotype 1 hepatitis C recurrence after liver transplantation. *Aliment Pharmacol Ther* ; 28:450-7.
- Lonardo, A.; Adinolfi, L.E.; Loria, P.; et al., (2004):** Steatosis and hepatitis C virus: Mechanisms and significance for hepatic and extrahepatic disease. *Gastroenterology*; 126 (2):586-97.

- Lonardo, A.; Loria, P.; Adinolfi, L.E.; et al., (2006):** Hepatitis C and steatosis: a reappraisal. *J Viral Hepat*; 13:73-80.
- Los Alamos National Laboratory.Los Alamos HCV Database (2007):** Available at: <http://hcv.lanl.gov/content/hcvdb/classification/genotable.html>. Accessed 9 August .
- Luay E. Al-Khurria, Khitam R. Al-Khafajia, Suhair A. Al-Salihib, , Safa A.A. Alwaysib and Raghad J. Al-Akayshic .,et al 2009** Pathology Department, College of Medicine, Baghdad University, Baghdad, Iraq Department of Chemical Pathology, Faculty of Medicine, Cairo University, Cairo, Egypt Laboratory Department, Gastroenterology and Hepatology Teaching Hospital, Medical City, Baghdad, Iraq Medical Department, Gastroenterology and Hepatology Teaching Hospital, Medical City, Baghdad, Iraq 2009
- Maeno, T.; Okumura, A.; Ishikawa, T.; et al., (2003):** Mechanisms of increased insulin resistance in non-cirrhotic patients with chronic hepatitis C virus infection. *J Gastroenterol Hepatol* ; 18:1358–63.
- Maillard, P.; Krawczynski, K.; Nitkiewicz, J.; et al., (2001):** Nonenveloped nucleocapsids of hepatitis C virus in the serum of infected patients. *J Virol* ; 75:8240-50.
- Mangia, A. (2007):** Short-duration therapy for hepatitis C: suitable for all? *Journal of Viral Hepatitis*, Volume 14, Number 4, April , pp. 221-227.
- Mangia, A., Minerva, N., Bacca, D.,et al., (2008):** Individualized Treatment Duration for Hepatitis C Genotype 1 Patients: A Randomized Controlled Trial, *Hepatology*, January (Abstract).
- Manos, M.M.; Leyden, W.A.; Murphy, R.C.; et al., (2008):** Limitations of conventionally derived chronic liver disease mortality rates: Results of a comprehensive assessment. *Hepatology* ; 47:1150-7.
- Marcello Persico, Mario Capasso, Eliana Persico, et al .,2007**Suppressor of cytokine signaling 3 (SOCS3) expression and hepatitis C virus–related chronic hepatitis: Insulin resistance and response to antiviral therapy. *Hepatology* (2007); 46:4, 1009.

- Marchesini, G.; Buglani, E. and Forlani, G. (2003):** Non-alcoholic steato-hepatitis and the metabolic syndrome. *Hepatology*; 37:917-23.
- Maylin, S. M.; Moucari, R.; Boyer, N.; et al., (2008):** Eradication of hepatitis C virus in patients successfully treated for chronic hepatitis C. *Gastroenterology*; 135:821-9.
- McHutchison, J.G.; Everson, G.T.; Gordon, S.C.; et al., (2008):** PROVE1: Results from a phase 2 study of telaprevir with peginterferon alpha-2a and ribavirin in treatment-naïve subjects with hepatitis C [abstract]. *J Hepatol* ; 48:A4.
- Me Hutchison,(2004);**understanding hepatitis c,*Am J Manage care* 10(2 supp):s 21-9
- Mendler, M.H.; Kanel, G.and Govindarajan, S. (2005):** Proposal for a histological scoring and grading system for non-alcoholic fatty liver disease. *Liver Int* ; 25:294-304.
- Metwally, M.; Esmat, G.; Zalata, K.; et al.,2006**Histopathological characterization of genotype 4 chronic hepatitis C.*Liver International journal of IASL*. Volume 26. Abstract 203.
- Missiha, S.B.; Ostrowski, M. and Heathcote, E.J. (2008):** Disease progression in chronic hepatitis C: Modifiable and nonmodifiable factors. *Gastroenterology* ; 134:1699-714.
- Mizuta, T.; Kawaguchi, Y.; Eguchi, Y.; et al. (2010):**Whole-body insulin sensitivity index is a highly specific predictive marker for virological response to peginterferon plus ribavirin therapy in chronic hepatitis C patients with genotype 1b and high viral load. *Dig Dis Sci* ; 55: 183–9.
- Mofrad, P.; Contos, M.J.; Haque, M.; et al., (2003):** Clinical and histologic spectrum of nonalcoholic fatty liver disease associated with normal ALT values. *Hepatology* ; 37:1286-92.
- Mohamed, M.K. (2004):** Epidemiology of HCV in Egypt. *The Afro-Arab Liver Journal.*, 3 (2);41-52.

- Monis, A.A. and Mabrok, S. et al., 2006**The relationship of hepatitis C virus genotype 4 and liver steatosis in Egypt. Liver International journal of IASL. Volume 26. Abstract 200.
- Monto, A.; Alonzo, J.; Watson, J.J.; et al., (2002):** Steatosis in chronic hepatitis C :relative contributions in obesity, diabetes mellitus and alcohol Hepatology ;36:729-36.
- Moucari, R.; Asselah, T.; Cazals-Hatem, D.; et al., (2008):** Insulin resistance in chronic hepatitis C: Association with genotypes 1 and 4, serum HCV RNA level, and liver fibrosis. Gastroenterology ; 134:416-23.
- Moucari, R.; Ripault, M.P.; Martinot-Peignoux, M.; et al., (2009):** Insulin resistance and geographical origin: major predictors of liver fibrosis and response to peginterferon and ribavirin in HCV-4. Gut ; 58: 1662–9.
- Moucari, R.; Forestier, N.; Larrey, D.; et al., (2010):** Danoprevir, an HCV NS3/4A protease inhibitor, improves insulin sensitivity in patients with genotype 1 chronic hepatitis C. Gut ; 59: 1694–8.
- Muir, A.J.; Bornstein, J.D. and Killenberg, P.G. (2004):** Peginterferon alfa-2b and ribavirin for the treatment of chronic hepatitis C in blacks and non-Hispanic whites. N Engl J Med. May 27 ;350 (22):2265-71.
- Muzzi, A.; Leandro, G.; Rubbia-Brandt, L.; et al., (2005):** Insulin resistance is associated with liver fibrosis in non-diabetic chronic hepatitis C patients. J Hepatol ;42:41 –6.
- National Cancer Registry of Egypt. (2007):** Magnitude of hepatocellular carcinoma in Egypt. Available at: <http://www.nci.edu.eg>. Accessed 3 August.
- Negro, F. and Sanyal, A.J. (2009):** Hepatitis C virus, steatosis and lipid abnormalities: clinical and pathogenic data. Liver Int ; 29 (Suppl. 2): 26–37.
- Neuman MG, Benhamou JP, Malkiewicz IM, et al., (2002):** Kinetics of serum cytokines reflect changes in the severity of chronic hepatitis C presenting minimal fibrosis. J Viral Hepat 2002, 9:134–140.

- Neuschwander-Tetri, B.A. and Caldwell, S.H. (2003):** Nonalcoholicsteatohepatitis: summary of an AASLD Single Topic Conference. *Hepatology*;37 (5):1202–19.
- Neuschwander-Tetri, B.A.; Brunt, E.M.; Wehmeier, K.R.; et al., (2003):** Improved nonalcoholic steatohepatitis after 48 weeks of treatment with the PPAR-gamma ligand rosiglitazone. *Hepatology*; 38:1008– 17.
- Noppornpanth, S.; Lien, T.X.; Poovorawan, Y.; et al., (2006):** Identification of a naturally occurring recombinant genotype 2/6 hepatitis C virus. *J Virol* ; 80:7569-77.
- Ohata, K.; Hamasaki, K.; Toriyama, K.; et al., (2003):** Hepatic steatosis is a risk factor for hepatocellular carcinoma in patients with chronic hepatitis C virus infection. *Cancer* ;97:3036– 43.
- Okuda, M.; Li, K.; Beard, M.R.; et al., (2002):** Mitochondrial injury, oxidative stress, and antioxidant gene expression are induced by hepatitis C virus core protein. *Gastroenterology*; 122:366– 75.
- O'Leary, J.G. and Davis, G.L. (2010):** Hepatitis C
Feldman: Sleisenger and Fordtran's Gastrointestinal and Liver Disease, 9th ed. Copyright © 2010 Saunders, An Imprint of Elsevier.
- Paradis, V.; Perlemuter, G.; Bonvoust, F.; et al., (2001):**High glucose and hyperinsulinemia stimulate connective tissue growth factor expression: a potential mechanism involved in progression to fibrosis in nonalcoholic steatohepatitis. *Hepatology* ;34:738– 44.
- Parti, D. (2006):** Transmission of hepatitis C virus by blood transfusions and other medical procedures: A global review. *J Hepatol* ; 45:607-16.
- Patel, K.; Zekry, A. andMcHutchison, J.G. (2005):**Steatosis and chronic hepatitis C virus infection: mechanisms and significance. *ClinLivDis* ;9:399- 410.
- Patel, K.; Muir, A. J. and McHutchison, J.G. (2006):** Diagnosis and treatment of chronic hepatitis C infection. *BMJ* ;332;1013-1017.

- Patton, H.M.; Patel, K.; Behling, C.; et al., (2004a):** The impact of steatosis on disease progression and early and sustained treatment response in chronic hepatitis C patients. *J Hepatol*; 40 (3):484–90.
- Patton, H.M.; Patel, K. and McHutchison, J.G. (2004):** Hepatic steatosis in chronic hepatitis C virus infection: a review of mechanisms, influence on natural history, and treatment outcomes. *Hepatol Rev* ;1:23– 31.
- Pawlotsky, J.M. (2003):** Hepatitis C virus genetic variability: pathogenic and clinical implications. *Clin Liver Dis* ; 7:45-66.
- Pearlman, B.; Ehleben, C. and Saifee, S. (2007):** Treatment extension to 72 weeks of peginterferon and ribavirin in hepatitis c genotype 1-infected slow responders. *Hepatology* ; 46:1671-4.
- Peffault de Latour, R.; Levy, V.; Asselah, T.; et al., (2004):** Long-term outcome of hepatitis C infection after bone marrow transplantation, *Blood* ; 103:1618-24.
- Peffault de Latour, R.; Asselah, T.; Levy, V.; et al., (2005):** Treatment of chronic hepatitis C virus in allogeneic bone marrow transplant recipients. *Bone Marrow Transplant* ; 36:709-13.
- Penin, F.; Dubuisson, J.; Rey, F.A.; et al., (2004):** Structural biology of hepatitis C virus. *Hepatology* ; 39:5-19.
- Perlemuter, G.; Sabile, A.; Letteron, P.; et al., (2002):** Hepatitis C virus core protein inhibits microsomal triglyceride transfer protein activity and very low density lipoprotein secretion: a model of viral-related steatosis. *FASEB J* ;16:185– 94.
- Petit, J.M.; Benichou, M.; Duvillard, L.; et al., (2003):** Hepatitis C virus-associated hypobetalipoproteinemia is correlated with plasma viral load, steatosis, and liver fibrosis. *Am J Gastroenterol* ; 98:1150–4.
- Piche, T.; Vandenbos, F.; Abakar-Mahamat, A.; et al., (2004):** The severity of liver fibrosis is associated with high leptin levels in chronic hepatitis C. *J Viral Hepat* ;11:91–6.

- Pineda, J.A.; Garcia-Garcia, J.A.; Aguilar-Guisado, M.; et al., (2007):** Clinical progression of hepatitis C virus-related chronic liver disease in human immunodeficiency virus-infected patients undergoing highly active antiretroviral therapy. *Hepatology*;46:622-30.
- Pockros, P.J.; Nelson, D.; Godofsky, E.; et al., (2008):** R1626 plus peginterferon Alfa-2a provides potent suppression of hepatitis C virus RNA and significant antiviral synergy in combination with ribavirin. *Hepatology*; 48:385-97.
- Poordad, F.; Reddy, K.R. and Martin, P. (2008):** Rapid virologic response:a new milestone in the management of chronic hepatitis C.*Clin Infect Dis*; 46: 78–84.
- Poorten, D.V and George, J. (2008):** Disease-Specific Mechanisms of Fibrosis: Hepatitis C Virus and Nonalcoholic Steatohepatitis; *Clin Liver Dis* (12) 805–824.
- Potthoff, A.; Berg, T. and Wedemeyer, H. (2009):** Late hepatitis B virus relapse in patients co-infected with hepatitis B virus and hepatitis C virus after antiviral treatment with pegylated interferon-a2b and ribavirin. *Scand J Gastroenterol* ;44:1487–1490.
- Potthoff, A.; Manns, M.P. and Wedemeyer, H. (2010):** Treatment of HBV/HCV coinfection. *Expert Opin Pharmacother* ;11:919–928.
- Powell, E.E.; Jonsson, J.R. and Clouston, A.D. (2005):** Steatosis: Co-factor in other liver diseases. *Hepatology*; 42:5-13.
- Poynard, T.; Ratziu, V.; Charlotte, F.; et al., (2001):** Rates and risk factors of liver fibrosis progression in patients with chronic hepatitis c. *J Hepatol* ; 34:730-9.
- Poynard, T.; Ratziu, V.; MacHutchison, J.; et al., (2003):** Effect of treatment with peginterferon or interferon alfa-2b and ribavirin on steatosis in patients infected with hepatitis C. *Hepatology*;38:75-85.
- Pradat, P.; Alberti, A.; Poynard, T.; et al., (2002):** Predictive value of ALT levels for histologic findings in chronic hepatitis C: A European collaborative study. *Hepatology* ; 36:973-7.

- Prati, D. (2006):** Transmission of hepatitis C virus by blood transfusions and other medical procedures: A global review. *J Hepatol* ; 45:607-16.
- Quinti, I.; Pierdominici, M.; Marziali, M.; et al., (2002):** European surveillance of immunoglobulin safety—results of initial survey of 1243 patients with primary immunodeficiencies in 16 countries. *Clin Immunol*; 104:231-6.
- Rahnavardi, M.; Moghaddam, S.M.; Alavian, S.M. (2008):** Hepatitis C in hemodialysis patients: Current global magnitude, natural history, diagnostic difficulties, and preventive measures. *Am J Nephrol* ; 28:628-40.
- Ramalho, F. (2003):** Hepatitis C and liver steatosis antiviral research 60(2): 125-127.
- Rao, M.R.; Naficy, A.B.; Darwish, M.A.; et al., (2002):** Further evidence for association of hepatitis C infection with parenteral schistosomiasis treatment in Egypt. *BMC Infect Dis* ; 2: 29.
- Rapicetta, M.; Argentini, C.; Dettori, S.; et al., (1998):** Molecular heterogeneity and new subtypes of HCV genotype 4. *Res Virol*; 149:293-297.
- Ratziu, V.; Giral, P.; Charlotte, F.; et al., (2000):** Liver fibrosis in overweight patients. *Gastroenterology*; 118:1117-23.
- Ratziu, V.; Massard, J.; Charlotte, F.; et al., (2006):** Diagnostic value of biochemical markers (FibroTest-FibroSURE) for the prediction of liver fibrosis in patients with non-alcoholic fatty liver disease. *BMC Gastroenterology* ; 6:6-19.
- Robertson, B.; Myers, G.; Howard, C.; et al., (1998):** Classification, nomenclature, and database development for hepatitis C virus (HCV) and related viruses: proposals for standardization. *International Committee on Virus Taxonomy. Arch Virol* ; 143:2493-503.
- Romero-Gomez, M.; Castellano-Megias, V.M.; Grande, L.; et al. (2003):** Serum leptin levels correlate with hepatic steatosis in chronic hepatitis C. *Am J Gastroenterol* ; 98:1135– 41.
- Romero-Gomez, M.; Del Mar Vilorio, M.; et al., (2005):** Insulin resistance impairs sustained response rate to peginterferon plus ribavirin in chronic hepatitis C patients. *Gastroenterology* ; 128: 636–41.

- Romero-Gomez, M.; Fernandez-Rodriguez, C.M.; Andrade, R.J.; et al., (2008):** Effect of sustained virological response to treatment on the incidence of abnormal glucose values in chronic hepatitis C. *J Hepatol*; 48: 721–7.
- Roskams, T.; Yang, S.Q.; Koteish, A. et al., (2003):** Oxidative stress and oval cell accumulation in mice and humans with alcoholic and nonalcoholic fatty liver disease. *Am J Pathol* ; 163:1301–11.
- Roulot, D.;Bourcier, V. and Observational VHC4 Study Group et al., (2007):** Epidemiological characteristics and response to peginterferon plus ribavirin treatment of hepatitis C virus genotype 4infection. *J Viral Hepat*; 14: 460–7.
- Rubbia-Brandt, L.;Quadri, R.;Abid, K.; et al., (2003):** Hepatocyte steatosis is a cytopathic effect of HCV-3. *J Hepatol*;33:106-15.
- Rubbia-Brandt, L.; Fabris, P.; Paganin, S.; et al., (2004):** Steatosis affects chronic hepatitis C progression in a genotype-specific way. *Gut*;53:406-12.
- Rubbia-Brandt, L.; Fabris, P.; Paganin, S.; et al., 2008** Steatosis affects chronic hepatitis C progression in a genotype-specific way.*Gut* , 36:145-156.
- Ryder, S.D.; Irving, W.L.; Jones, D.A.; et al., (2004):** Progression of hepatic fibrosis in patients with hepatitis C: a prospective repeat liverbiopsy study. *Gut*;53:451–455.
- Samuel, D.; Bizollon, T.; Feray, C.; et al., (2003):** Interferon-alpha 2b plus ribavirin in patients with chronic hepatitis C after liver transplantation: a randomized study *Gastroenterology*. Mar ;124 (3):642-50.
- Samuel, V.T.; Petersen, K.F. and Shulman, G.I. (2010):** Lipid-induced insulin resistance: unravelling the mechanism. *Lancet* ; 375: 2267–77.
- Sanchez-Tapias, J.M.; Diago, M.; Escartin, P.; et al., (2006):** Peginterferon-alfa2a plus ribavirin for 48 versus 72 weeks in patients with detectable hepatitis C virus RNA at week 4 oftreatment.*Gastroenterology* ;131:451-60.
- Sandeep, M. and Vinod, K.D. (2010):** Hepatitis c Medicine Specialties > Gastroenterology > Liver <medicine. medscape.com>Updated: Sep 28.

- Sangiovanni, A.; Prati, G.M.; Fasani, P.; et al., (2006):** The natural history of compensated cirrhosis due to hepatitis C virus: A 17-year cohort study of 214 patients. *Hepatology* ; 43:1303-10.
- Sanyal, A.J.; Contos, M.J.; Sterling, R.K.; et al., (2003):** Nonalcoholic fatty liver disease in patients with hepatitis C is associated with features of the metabolic syndrome. *Am J Gastroenterol* ;98: 2064– 71.
- Scheuer, P. (1991):** Classification of chronic viral hepatitis: A need for reassessment. *J Hepatol* ; 13:372-4.
- Seeff, L.B. and Hoofnagle, J.H. (2002):** National Institutes of Health Consensus Development Conference: management of hepatitis C. *Hepatology*; 36 (Suppl): S1-S2.
- Shea, D.O.; Tuite, H.; Farrell, G.; et al., (2008):** Role of rapid virological response in prediction of sustained virological response to Peg-IFN plus ribavirin in HCV/HIV co-infected individuals. *J Viral Hepat*; 15:482-9.
- Sheikh, M.Y.; Choi, J.; Qadri, I. et al., (2008):** Hepatitis C virus infection: Molecular pathways to metabolic syndrome. *Hepatology* ; 47:2127-33.
- Sheridan, I.; Pybus, O.G.; Holmes, E.C.; et al., (2004):** High-resolution phylogenetic analysis of hepatitis C virus adaptation and its relationship to disease progression. *J Virol* ; 78:3447-54.
- Sherlock, S. and Dooly, J. (2002):** A) Biopsy of the liver pp: 37-44. B) Viral hepatitis pp: 267-284. C) Chronic viral hepatitis pp: 321- 334. D) Cirrhosis pp: 365-380. In: Sherlock S and Dooly J (eds): *Diseases of the liver and biliary system*, 11th ed. Oxford: Blackwell Scientific publication.
- Shi, S.T.; Polyak, S.J.; Tu, H.; et al., (2002):** Hepatitis C virus NS5A colocalizes with the core protein on lipid droplets and interacts with apolipoproteins. *Virology* ;292:198–210.
- Shiffman, M.L.; Salvatore, J.; Hubbard, S.; et al., (2007a):** Treatment of chronic hepatitis C virus genotype 1 with peginterferon, ribavirin, and epoetin alpha. *Hepatology*;46:371-9.

- Shiffman, M.L.; Suter, F.; Bacon, B.R.; et al., (2007b):** Peginterferon alfa-2a and ribavirin for 16 or 24 weeks in HCV genotype 2 or 3. *N Engl J Med* ; 357:124-34.
- Shiha, G.; Seif, S.; Zalata, K. et al., 2006** Hepatic steatosis in chronic hepatitis C virus genotype 4 infection:prevalence and clinical correlations.Liver International journal of IASL. Volume 26. Abstract 212.
- Shintani, Y.; Fujie, H.; Miyoshi, H.; et al., (2004):** Hepatitis C virus infection and diabetes: direct involvement of the virus in the development of insulin resistance. *Gastroenterology* ;126:840– 8.
- Shobokshi, A.; Serebour, P.E.; Skakni, L.; et al., (2003):** Combination therapy of peginterferon alfa-2a (40 KD) (PEGASYs) and ribavirin (COPEGUSs) significantly enhance sustained virological and biochemical response rate in chronic hepatitis C genotype 4 patients in Saudi Arabia. *Hepatology* ; 38 (Suppl.): 636A (abstract).
- Shoukry, N.H.; Grakoui, A.; Houghton, M.;et al., (2003):** Memory CD8₊ T cells are required for protection from persistent hepatitis C virus infection. *J Exp Med*;197:1645-1655.
- Silverman, J.F.; O'Brien, K.F.; Long, S.; et al., 1990** Liver pathology in morbidly obese patients with and without diabetes.*Am J Gastroenterol* 85:1349-1355
- Simmonds, P. (2001):** The origin and evolution of hepatitis viruses in humans. *J Gen Virol* ; 82:693-712.
- Simmonds, P.; Bukh, J.; Combet, C.; et al., (2005):** Consensus proposals for a unified system of nomenclature of hepatitis C virus genotypes. *hepatology*;42:962-973.
- Sobesky, R.; Feray, C.; Rimlinger, F.; et al., (2007):** Distinct hepatitis C virus core and F protein quasispecies in tumoral and nontumoral hepatocytes isolated via microdissection. *Hepatology* ; 46:1704-12.
- Soriano, V.; Mocroft, A.; EuroS.I.D.A. Study Group.et al., (2008):** Spontaneous viral clearance, viral load, and genotype distribution of hepatitis C virus

- (HCV) in HIV-infected patients with anti-HCV antibodies in Europe. *J Infect Dis* ; 198: 1337–44.
- Stoszek, S.K.; Abdel-Hamid, M.; Narooz, S.; et al., (2006):** Prevalence of and risk factors for hepatitis C in rural pregnant Egyptian women. *Trans R Soc Trop Med Hyg*; 100: 102–7.
- Sulkowski, M.S. (2008):** Viral hepatitis and HIV coinfection. *J Hepatol*; 48:353-67.
- Sulkowski, M.S.; Ray, S.C. and Thomas, D.L. (2002):** Needlestick transmission of hepatitis C. *JAMA*; 287:2406-13.
- Suzuki, A.; Angulo, P.; Lymp, J.; et al., (2005):** Hyaluronic acid, an accurate serum marker for severe hepatic fibrosis in patients with non-alcoholic fatty liver disease. *Liver Int* ; 25:779-86.
- Szanto, P.; Grigorescu, M. and Dumitra, I. et al., (2006):** Steatosis in Hepatitis C Virus Infection. Response to Anti-Viral Therapy; *J Gastrointestin Liver Dis* June; Vol.15 No.2, 117-124.
- Talaat, M.; El-Oun, S.; Kandeel, A.; et al., (2003):** Overview of injection practices in two governorates in Egypt. *Trop Med Int Health* ; 8: 234–41.
- Taliani, G.; Gemignani, G.; Ferrari, C.; et al., (2006):** Pegylated interferon alfa-2b plus ribavirin in the retreatment of interferon-ribavirin nonresponder patients. *Gastroenterology* ; 130:1098-106.
- Tanaka, E. (2004):** Hepatocellular carcinoma: recent trends in Japan. *Gastroenterology* ;127:S17-26.
- Tanaka, Y.; Kurbanov, F.; Mano, S.; et al., (2006):** Molecular tracing of the global hepatitis C virus epidemic predicts regional patterns of hepatocellular carcinoma mortality. *Gastroenterology* ; 130:703-14.
- Terrault, N.A. and Berenguer, M. (2006):** Treating hepatitis C infection in liver transplant recipients. *Liver Transpl*; 12:1192-204.
- Thomas, D.L. (2008):** The challenge of hepatitis C in the HIV-infected person. *Annu Rev Med* ; 59:473-85
- Thomas, D.L. and Seeff, L.B. (2005):** Natural history of hepatitis C. *Clin Liver Dis*; 9:383-398.

- Torriani, F.J.; Rodriguez-Torres, M.; Rockstroh, J.K.; et al., (2004):** Peginterferon Alfa-2a plus ribavirin for chronic hepatitis C virus infection in HIV-infected patients. *N Engl J Med* ; 351:438-50.
- Tsochatzis, E.; Papatheodoridis, G.V.; Manesis, E.K.; et al., (2007):** Hepatic steatosis in genotype 4 chronic hepatitis C is mainly because of metabolic factors. *Am J Gastroenterol* ; 102:634- 641.
- Ueki, K.; Kondo, T. and Kahn, C.R. (2004):** Suppressor of cytokine signaling 1 (SOCS-1) and SOCS-3 cause insulin resistance through inhibition of tyrosine phosphorylation of insulin receptor substrate proteins by discrete mechanisms. *Mol Cell Biol*;24:5434–46.
- Vandelli, C.; Renzo, F.; Romano, L.; et al., (2004):** Lack of evidence of sexual transmission of hepatitis C among monogamous couples: Results of a 10-year prospective follow-up study. *Am J Gastroenterol* ; 99:855-9.
- Vanni, E.; Abate, M.L.; Gentilcore, E.; et al., (2009):** Sites and mechanisms of insulin resistance in nonobese, nondiabetic patients with chronic hepatitis C. *HEPATOLOGY* 2009; doi:10.1002/ hep.23031.
- Verbeeck J, Maes P, Lemey P et al.,2006** Investigating the origin and spread of hepatitis C virus genotype 5a. *J Virol* (2006); 80(9): 4220–4226.
- Verbeeck, J.; Peigue-Lafeuille, H.; Ross, R.S.; et al., (2008):** HCV genotype 5: Epidemiology and spread of an uncommon genotype. *J Clin Virol* ; 41:170-1.
- Walsh, M.J.; Jonsson, J.R.; Richardson, M.M.; et al., (2006):** Non-response to antiviral therapy is associated with obesity and increased hepatic expression of suppressor of cytokine signalling 3 (SOCS-3) in patients with chronic hepatitis C, viral genotype 1. *Gut*;55:529–35.
- Wasley, A. and Alter, M.J. (2000):** Epidemiology of hepatitis C: Geographic differences and temporal trends. *Semin Liver Dis* ; 20:1-16.
- Wasley, A.; Grytdal, S. and Gallagher, K. (2008):** Surveillance for acute viral hepatitis—United States, 2006. *MMWR Surveill Summ* ; 57:1-24.

- Weinbaum, C.M.; Sabin, K.M. and Santibanez, S.S. (2005):** Hepatitis B, hepatitis C, and HIV in correctional populations: A review of epidemiology and prevention. *AIDS*; 19 (Suppl 3):S41-6.
- Weinman, S.A. and Belalcazar, L.M. Hepatitis C (2004):** metabolic liver disease. *Gastroenterology* ;126:917–9.
- Wells, J.T.; Lucey, M.R. and Said, A. (2006):** Hepatitis C in transplant recipients of solid organs, other than liver. *Clin Liver Dis* ; 10:901-17.
- Westin, J.; Nordlinder, H.; Lagging, M.; et al., (2002):** Steatosis accelerates fibrosis development over time in hepatitis c virus genotype 3 infected patients. *J Hepatol*;37:837-42.
- White, D.L.; Ratziu, V. and El-Serag, H.B. (2008):** Hepatitis C infection and risk of diabetes: a systematic review and meta-analysis. *J Hepatol* ; 49: 831–44.
- Wiesner, R.H.; Sorrell, M. and Villamil, F. (2003):** Report of the first International Liver Transplantation Society expert panel consensus conference on liver transplantation and hepatitis C. *Liver Transpl* ; 9:S1-9.
- World Health Organization. Hepatitis C (2009):** Available at: http://www.who.int/vaccine_research/diseases/viral_cancers/en/index2.html. Accessed 06/03/2010.
- Wyatt, J.; Baker, H.; Prasad, P.; et al., 2004** Steatosis and fibrosis in patients with chronic hepatitis C. *J clin pathol*;57:402-406.
- Yaginuma, R.; Ikejima, K.; Okumura, K.; et al., (2006):** Hepatic steatosis is a predictor of poor response to interferon alfa-2b and ribavirin combination therapy in Japanese patients with chronic hepatitis C. *Hepatology Research* 35; 19–25.
- Ye, J.; Wang, C.; Sumpter, J. et al., (2003):** Disruption of hepatitis C virus RNA replication through inhibition of host protein geranylgeranylation. *Proc Natl Acad Sci U S A* ;100:15865–70.
- Yoneda, M.; Yoneda, M.; Mawatari, H.; et al., (2008):** Noninvasive assessment of liver fibrosis by measurement of stiffness in patients with nonalcoholic fatty liver disease (NAFLD). *Dig Liver Dis* ; 40:371-8.

- Younossi, Z.M. and McCullough, A.J. (2009):** Metabolic syndrome, nonalcoholic fatty liver disease and hepatitis C virus: impact on disease progression and treatment response. *Liver Int* ; 29 (Suppl. 2): 3–12.
- Yu, X.; Qiao, M.; Atanasov, I.; et al., (2007):** Cryo-electron microscopy and three dimensional reconstructions of hepatitis C virus particles *Virology* ; 367:126-34.
- Zafrani, E. (2004):** Non-alcoholic fatty liver disease: An emerging pathological spectrum. *Virchows Arch* ; 444:3-12.
- Zaitoun, A.M.; Al Mardini, H.; Awad, S.; et al., (2001):** Quantitative assessment of fibrosis and steatosis in liver biopsies from patients with chronic hepatitis C. *J Clin Pathol*;54:461-5.
- Zeuzem, S.; Hultcrantz, R.; Bourliere, M.; et al., (2004):** Peginterferonalpha-2b plus ribavirin for treatment of chronic hepatitis C in previously untreated patients infected with HCV genotypes 2 or 3. *J Hepatol*;40:993-9.