

Evaluation of Icterus Causes in Hospitalized Patients with Jaundice in Infectious Ward of Sina Hospital of Tabriz

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Abstract: Icterus can be the result of wide spectrum of causes, ranging from benign and self-limited conditions to life threatening ones. Some of these causes are curable with early diagnosis and early treatment and some, such as viral hepatitis can be controlled to some degree with supportive treatments, and in these patients it is important to consider preventive treatments in order to stop transmission. In a cross sectional – descriptive, study 105 cases of inpatients with icterus have been studied. Data have been collected by using patients file and results have been inserted in a question aired and data have been analyzed by using spss, chi-square statistical software. 16 final diagnosis generally have been suggested in this research which are respectively: acute hepatitis B 20.9 %, Chronic hepatitis B 13.3 %, Cirrhosis 13.3 %, Intra hepatic cholestasis 12.38 %, Drug induced hepatitis 8.6 %, Infectious mono nucleuses, CMV 7.6 %, post hepatic cholestasis hepatitis 5.71%, autoimmune hepatitis 4.8 %, hepatitis C 3.6 %, Hepatocellular carcinoma 3.6 %, unknown causes of hepatitis 1.9% and Wilson disease, hemochromatosis, hepatic hemangioma, hepatitis A and alcoholic hepatitis in 0.9% were found. By determining the prevalence of the causes of icter and using some clinical evidence and laboratory tests, we can diagnose the main cause of it and use suitable medical treatment to decrease the mortality and morbidity of the disease.

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1. Introduction

The yellow color of body tissue resulted from bilirubin accumulation in skin and other mucosa is called icterus (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005; Dienstag, 2010; Sean and Roche, 2004). The normal rate of serum bilirubin is 0.1- 1.2 mg/dl. If serum total bilirubin is more than 2 mg/dl, it's called hyper bilirubinemia and when it's more than 2.5 mg/dl, icterus can be diagnosed (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005; Dienstag, 2010; Sean and Roche, 2004). To identify icterus reason investigation of patient's history, physical examination, clinical test and imaging methods were very crucial (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005; Dienstag, 2010; Sean and Roche, 2004). Symptoms of parenchymal liver or cholestasis stages were necessary in detecting and curing (Sean and Roche, 2004). Cirrhosis is resulted from three irreversible pathological changes of liver cells that are as necrosis, fibrosis and regeneration (Dienstg, 2010; Ebell, 2004). Nudels derived from degenerated hepatocytes maybe smaller than 3mm (micro nodular cirrhosis) or larger than 3mm (macro nodular cirrhosis), small nodules are distinct characteristic of alcoholic cirrhosis and large

regenerative nodules which named cirrhosis subsequent necrosis are one of the final outcomes of chronic hepatitis (Landis et al., 1998). Cirrhosis pathology determinists clinical features (Michael and Sangiv, 2010; Dienstag, 2010). Icterus can be the result of infectious and non-infectious causes. The range of these causes can be from benign and self-limited diseases to life threatening ones, Such as autoimmune and fulminant hepatitis. Many of these cases can be prevented and cured (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005). Treatment with glucocorticoids in autoimmune hepatitis and effective medication in Wilson's diseases can be lifesaving (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005). On the other hand, result of treatment with glucocorticoids in viral hepatitis B and C can be disastrous and the goal of treatment in these diseases is supportive and prevent of their transmission (Dienstg, 2010; Landis et al., 1998). In drug induced hepatitis, toxic and alcoholic hepatitis, discontinue of the cause can be lifesaving (Michael and Sangiv, 2010; Dierstag, 2012). This study was performed to understand the reasons of icterus which lead to administrant in infection ward of Sina hospital of Tabriz, and to evaluate their cause and to reduce their

morbidity and mortality with clinical suspicion and early diagnose and early treatment.

2. Material and Method

In a cross sectional–descriptive research, 105 hospitalized cases which had icterus were studied during 3 years (2004-2007) in infectious ward in Sina hospital of Tabriz. Collected data include patient's history, clinical and Para clinical data analyzed by SPSS, chi Square and ANOVA, one-way statistical software.

The forms filled for each patient consist of below items:

Demographic data (age, gender, occupation, study level and marriage), behavior data (sexual contact, smoking, alcohol consumption, intravenous drug user, ...), patients data (special drug usage, underlying liver disease and other diseases, history of; recent surgery, hereditary diseases, blood product transfusion, Ischemic status, endoscopy, autoimmune diseases, percutaneous injury, hemodialysis, pregnancy) signs and symptoms (malaise, anorexia, fatigue, myalgia, joint pain, weakness weight loss, nausea, vomiting, abdominal or right upper quadrant discomfort, fever jaundice, weakness, skin rash, itching arthritis, lymphadenopathy, splenomegaly, hepatomegaly, pharyngitis, conjunctively effusion) and signs of hepatic encephalopathy.

Lab data *AST, ALT, ALP, PTT, PT, INR*, total bilirubin level.

Special viral test and other diseases total (HBSAg, HBSAb, HBCAb, HCVAb, and serum levels of ceruloplasmin, antinuclear antibody, smooth muscle antibody and imaging data (son graphic, CT scan ...).

3. Results

In this study 105 patients include 57 males and 48 females that had icterus were studied. The average ages of cases were 37.73 ± 1.094 years old. Female age was 36.67 ± 2.904 and the average male age was 38.67 the average ± 2.538 . Married cases were 48 and 57 cases were single. Abdominal pain in 57 persons (31 males & 26 females), fever in 38 persons (23 males & 15 females), respiratory finding in 7 persons (4 males & 3 females), lymphadenopathy in 8 persons (7 males & 1 females), splenomegaly in 9 persons (8 males & 1 females), gynecomastia in 3 persons (2 males & 1 females), asterixis in 5 persons (3 males & 2 females), ascites in 23 persons (12 males & 11 females), itching in 49 persons (23 males & 26 females), anorexia in 90 persons (50 males & 40 females) and final weight loss in 29 persons (16 males & 13 females) were recorded. Patient's risk factors were showed in (chart-1). Totally 16 final distinctions of different disease

were recorded (chart-2). The average result of AST in 93 persons 223.1 ± 35.5 and ALT in 93 persons 217 ± 37.3 and ALP in 92 persons 511.7 ± 49.1 was recorded. Results of AST and ALT were allocated in 4 groups include normal, triple, 5fold and more than 5fold. From 93 AST reports, 20 normal, 34 cases triple, 20 cases 5 fold and 19 cases more than 5fold were recorded. In 93 ALT reports 24 normal, 29 triple, 22 fivefold and 17 more than 5 fold were identified. In ALP reports 55 normal, 24 duplicate and 13 more than duplicate were found. Among 87, INR samples 82.9% were normal and 17.1% were abnormal. In 36 patients with hepatitis, 22 acute hepatitis were identified. Risk factors for acute hepatitis were: 11 cases had sexual contact with HBV patients, 8 cases had injection drug use, 5 cases had household contact and 2 cases had blood product transfusion in their history. In 11 cases chronic hepatitis were distinguished which: 4 cases had sexual contact with HBV patients, 1 case had injection drug use, 4 cases had household contact and 3 cases had blood product transfusion in their history. In 4 patients with hepatitis C they had: sexual content with HCV patient and injection drug use history. From 13 intra hepatic cholestasis, 5 cases due to gall stones, 3 cases due drug induced cholestasis, 2 cases due pregnancy cholestasis, 1 case malignancy and 2 cases with indefinite reasons were observed.

In 6 cases, with post hepatic 2 patients had choledochal duct stone, 2 patient had acute cholangitis, 1 patient had pancreatitis and 1 patient had pancreatic carcinoma were identified. In 14 cases of cirrhosis, 5 patients had chronic hepatitis B, 1 patient had hepatitis B&C, 4 patients had alcohol drinking history and 2 patients with unspecified reason were reported. In 9 cases of drug induced hepatitis they had history of drugs usage as follow: 1 case had diclofenac, chlorpromazin and Amytriptilin consumption, 3 cases had halothane and Antihypertensive consumption. In patients with acute viral hepatitis, cirrhosis, cholestasis, infectious diseases and autoimmune hepatitis a significant relationship was observed between age and diseases reason ($P < 0.05$) but in chronic drug hepatitis no such relationship was distinguished ($P = 0.381$). In patients with acute viral hepatitis, drug induced and autoimmune hepatitis and cholestasis significant relationship exist between gender and diseases reason ($P < 0.05$) but in chronic hepatitis, cirrhosis and infectious diseases no significant correlation was found ($P > 0.05$). Autoimmune hepatitis and average bilirubin level showed significant difference between INR normal and INR abnormal persons ($P < 0.05$) but other factors such as age, AST, ALP and ALT had no significant difference in mentioned groups ($P < 0.05$). When AST increased triple, the average age rate

showed significant, ($P = 0.39$) but bilirubin level increasing was not significant ($P = 0.894$). If AST increased fivefold, ALT and ALP increasing were significant, ($P < 0.05$) but average age and bilirubin level was not significant ($P > 0.05$). In increasing more than fivefold, bilirubin level and ALT increasing were significant, ($P < 0.05$) whereas ALP and age were not significant ($P > 0.05$). When ALT increasing was triple, AST increasing was significant ($P = 0.003$), but average age, bilirubin level and ALP increasing were not significant ($P > 0.05$). In fivefold increasing, AST increased too ($P < 0.001$) but average age, bilirubin level and ALP not changed ($P > 0.05$). When ALT increased more than fivefold, bilirubin level and AST increased significantly ($P < 0.001$) but ALP and age were not changed ($P = 0.358$, $P = 0.51$). No significant increasing in AST levels was happen in acute and chronic hepatitis, cirrhosis, drug induced hepatitis and infectious diseases in comparison with other diagnosis ($P > 0.05$). In patients with acute, chronic and drug hepatitis, cirrhosis, cholestasis and infectious diseases no significant correlation was detected with ALT and other diagnosis ($P > 0.05$). There was a significant difference existed between ALP increasing in cholestasis in comparison with acute viral, chronic and drug hepatitis ($P < 0.05$). INR increasing in autoimmune hepatitis showed significant difference in acute viral, chronic and drug induced hepatitis, cirrhosis, cholestasis and infectious diseases ($P < 0.05$). No significant relationship was found among abdominal pain, respiratory finding, asterixes, anorexia, weight loss and icterus ($P > 0.05$), but there was a significant difference existed between fever and patients with autoimmune, acute, chronic and drug induced hepatitis ($P < 0.05$). There was a significant difference existed between lymphadenopathy, splenomegaly, ascites, itching and patients with acute, chronic, drug induced hepatitis ($P < 0.05$). In patient with alcohol drinking, infectious diseases, surgery, hereditary diseases and blood product transfusion no significant relationship was recorded ($P > 0.05$) but in sexual contact with suspicious case and injection drug use significant relationship was recorded ($P = 0.048$, $P = 0.033$).

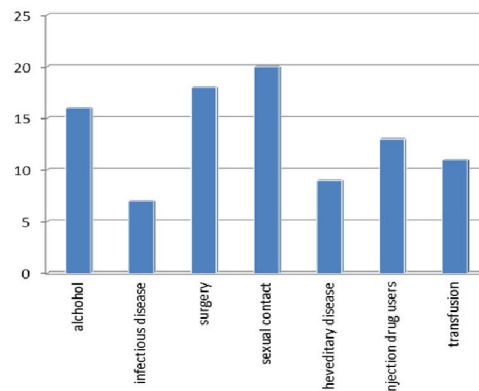


Chart 1: patients risk factors

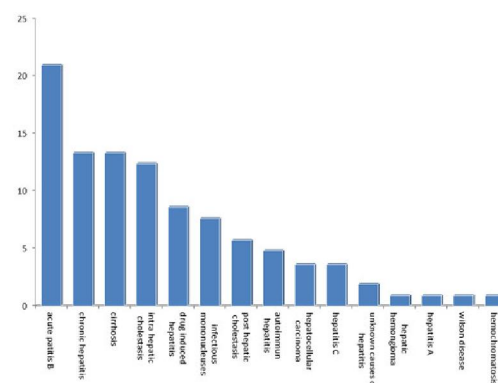


Chart 2: Diagnosis of jaundice in icterus patients

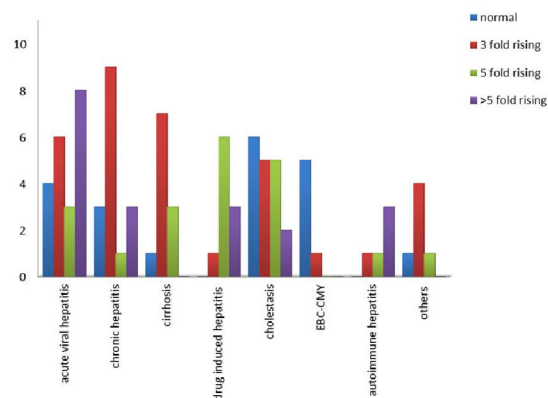


Chart 3: AST increasing according to diagnosis

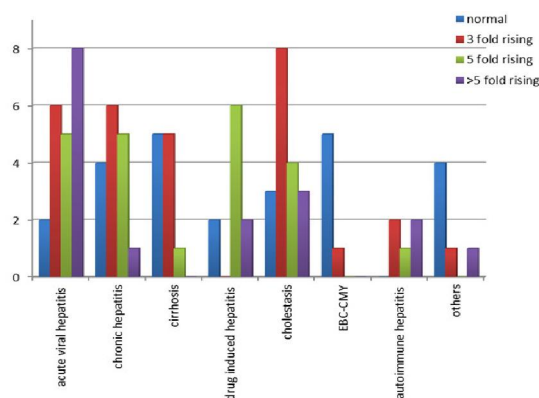


Chart 4: increasing according to diagnosis

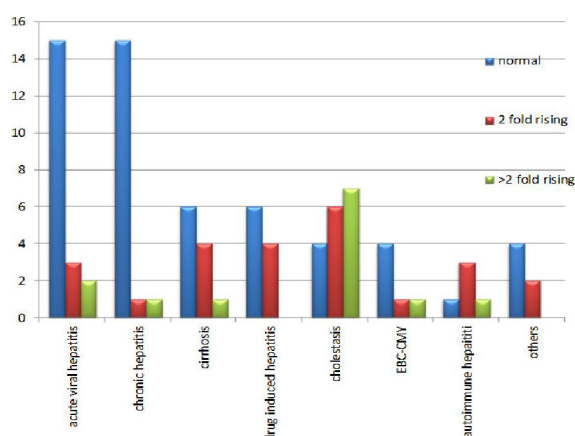


Chart 5: ALP increasing according to diagnosis

4. Discussion

In patient with icterus special principals were necessary to reach favorable results in shortest time (Michael and Sangiv, 2010; Dierstag, 2012). In each patient icterus reason should be distinguished carefully (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005). In this case paying attention to some parameters and risk factors can be very helpful such as: medical history, occupation, drug usage, infectious diseases, alcohol drinking, sexual contacts with suspicious cases suspicious injection, blood product transfusion and hereditary diseases (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005). Also questioning about other symptoms includes abdominal pain, anorexia, itching, fever, recent weight loss and etc. were crucial (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005). In physical examination existence of lymphadenopathy, splenomegaly, gynecomastia, astringies and ascites should be noticed (Michael and Sangiv, 2010; Dierstag, 2012; Berk and Korenblat, 2005). In provided study all of mentioned points were

noticed carefully. In addition of Para clinical test, liver enzymes such as AST, ALT, ALP and INR were evaluated. Different age groups from 1 – 50 years old were studied with maximum prevalence in 21- 30 years old. In this research clinical symptoms rate accompanied by icterus were included: fever 36.2%, anorexia 85.7%, abdominal pain 54.3%, ascites 21.9%, itching 46.7% and a splenomegaly 8.6% which was different from similar study by Dragosics (Dragosics et al., 1987). Total bilirubin level was arranged in 3 groups and maximum frequency was in 3- 10 that was different from similar study (Dragosics et al., 1987). In similar study AST and ALT arranged in 5 groups and first maximum frequency was in 100 - 500 (52.7 %) and second Max was in lower than 100 (34.4%), but in the following research first Max was in lower than 100 (46.2%) and second Max was in 100 -500 (44.1%). Final diagnosis frequency referring icterus reason in similar study was allocated to viral hepatitis (83.3%) and obstructive icterus (7.7%), cirrhosis, drug induced and bacterial hepatitis were 2.3 %. In provided study viral hepatitis had Max frequency (40.9%) and cholestasis, cirrhosis, drug induced hepatitis were 18.1, 13.3, and 9.5 % respectively. Comparing two research was identified cirrhosis and drug induced hepatitis frequency was 20% more than similar research (Dragosics et al., 1987). In other research (Sharma et al., 2010), hepatitis B occurrence investigated in blood dedication people, clarified that most of HBS Ag carriers was in 31-40 years old, but in provided research maximum prevalence was in 21-30 years old. In other study (Miquel et al., 2013), clinical finding frequencies in cirrhotic patients were: in cirrhotic patients were: itching (5.8%), splenomegaly (81.2%), ascites (76.9%), gynecomastia (21%). In our study the frequency of these finding were: abdominal pain (71.4%), fever (50%), respiratory symptom (21.4%), splenomegaly (7.1%), gynecomastia (14.3%), ascites (85.7%), itching (37.1%), anorexia (92.8%) and weigh loss (21.4%). On the other hand max frequency in medical status in our study was ascites (85.7%) and in clinical symptoms anorexia was maximum (92.8%). So many differences were recorded in splenomegaly frequency in two researches. One research showed that main cause of icterus in surgery ward of Tabriz Sina hospital were obstructive icterus resulted from duct Choledochal duct stone and pancreatic carcinoma (Bryant and Dreifuss, 1996). In our study main reason of icterus in infectious ward of Tabriz Sina hospital was viral hepatitis, cirrhosis, cholestasis and drug induced hepatitis respectively. It seems difference between the causes of icter in 2 wards had a relation with hospitalization of obstructive and surgery emergencies condition (pancreatitis) in surgery wards

but other cause of icter such as hepatitis and cirrhosis cases hospitalize internal and infectious disease ward.

5. Conclusion

The most important reason of icterus in this research was viral hepatitis, cirrhosis, cholestasis and drug induced hepatitis. According to distinctive transmission ways of viral hepatitis, prevention from transmission is necessary. Based on earlier research drug induced hepatitis prevalence was higher than expected rate, so too usage of some drugs which can cause drug induced hepatitis should be limited. Accurate check of accompanied clinical symptoms, patient history, questioning and suitable Para clinical test could be useful in icterus distinguished timely.

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