

Jaundice among pregnant women in Alexandria – Egypt: A descriptive study

Sherif R. Omar *, Ezzat M. Hassan *, Mohamed A. El-Samra †, Mohamed A. Hassan ‡

Abstract: Objectives: To describe causes, sociodemographic characteristics, and prevalence of some factors that could participate in the occurrence of jaundice during pregnancy in Alexandria - Egypt. **Methods:** A descriptive study started January 2005 for one year duration, included 20 cases (all cases admitted to Alexandria Fever Hospital and Shatby University Hospital for Obstetrics and Gynecology with the clinical and laboratory diagnosis of jaundice). Questionnaire sheet administered through an interview with each patient includes demographic data, known risk factors, and medical history. Full clinical and obstetric examination was done, with an ultra-sound review, estimation of serum ALT, AST, alkaline phosphatase, bilirubin (total and direct), and serological screening against virus hepatitis A, B, C and E. **Results:** Most cases (n=17) were admitted to the Fever Hospital. Of them; 11 cases (55%) were due to HAV infection, 5 cases resulted from other virus hepatitis. Remaining 4 cases were due to conditions related to pregnancy. Age between 20 and 30 represented 80% of cases. Low social score accounts for 70% of cases. Only 7 cases presented during the 1st trimester. Most cases got no previous history of jaundice (95%); only 4 cases got family history of jaundice. The majority of cases (65%) reported one or more virus known hepatitis risk factors; suffers anaemia (55%), hepatomegaly (90%), and got abnormal levels in blood chemistry. **Conclusions:** The study is an update in current causes, demographic pattern, and risk factors associated with clinical jaundice during pregnancy. It documents that many factors are implicated in the causation of this relatively uncommon clinical condition.

Keywords: Alexandria, Egypt, Jaundice, Pregnancy

INTRODUCTION

The term jaundice or icterus is a clinical and laboratory term implying deposition of bile pigment in the skin and mucous membranes, resulting in yellow discoloration of the patient. Clinically, it appears whenever serum bilirubin reaches 3 mg/ml.¹

Pregnancy state is mildly cholestatic due the increase in endogenous estrogens.

This will mildly change some biochemical tests, but primary liver disease is uncommon.² Pregnant women also are considered to be immuno-compromised, the new formed foetal tissues face mother's immunity with a challenge to down regulate the specific adaptive immune responses (i.e., foetal tolerance), and the result may favor vulnerability to infection.³

* Tropical Health Department, High Institute of Public Health, University of Alexandria, Egypt

†Obstetrics and Gynecology Department, Faculty of Medicine, University of Alexandria, Egypt

‡Fever Hospital, Ministry of Health, Alexandria, Egypt

Incidence of jaundice is rare during pregnancy; jaundice may result from common hepatic disorders or from conditions unique to pregnancy. Viral hepatitis is the most common cause during pregnancy, rare causes of jaundice which is related to gestation are hyperemesis gravidarum at early pregnancy, intra-hepatic cholestasis of pregnancy, toxæmia of pregnancy, acute fatty liver of pregnancy (AFLP), and the HELLP syndrome (Haemolysis, Elevated liver enzymes, and Low Platelets).⁴

The present study was carried out to describe causes, sociodemographic characteristics, and factors that might predispose to jaundice during pregnancy in Alexandria – Egypt

MATERIAL and METHODS

A descriptive study was carried out over one year duration, starting from January 2005, in the University of Alexandria Obstetrics and Gynecology Hospital in Shatby, and Alexandria Fever Hospital. The recruited population (n=20) was all cases admitted to both hospitals during the period

of study having both clinical and laboratory jaundice.

An interview questionnaire was used to collect data from parturients with regards to personal, demographic, and socioeconomic data. The social standard was assessed according to a score system modified after Fahmy and El-Sherbini.⁵ Data related to jaundice; medical as well as obstetric history were comprehensively collected.

Thorough medical and obstetric clinical examination was done for all cases. Laboratory investigations included estimation of serum enzymatic activity of Alanine and Aspartate Transferase (ALT & AST), alkaline phosphatase, total and direct bilirubin, as well as complete blood count (CBC). Serological screening (ELISA) against virus hepatitis was used to detect anti-HAV IgM, HBs Ag, anti-HCV antibodies, and anti-HEV IgM.

Upper abdominal and pelvic ultrasound examination for all 20 cases was done, to reveal size and echogenicity of the liver, biliary tree condition and possibility of

cholestasis, or obstruction especially with gall stones. Gestational state was also assessed through an obstetric ultrasound.

Statistical analysis: Collected data were coded, tabulated, and organized. Analysis was done using the Statistical Package for Social Sciences (SPSS), version 13.0. Data were summarized using: the frequency distribution, arithmetic mean and standard deviations (SD) as a measure of central tendency and dispersion respectively for normally distributed quantitative data, and the median for abnormally distributed data

RESULTS

The study population within year duration amounted 20 jaundiced pregnant women; most of them (**Table 1**) belonged to the young age group (20-30 years=80%), while the remaining cases were above 30. Most cases (17, 85%) were admitted to Alexandria Fever Hospital, as Shatby Hospital usually refers these potentially infectious cases without admission. Cases came equally from both urban and rural residential areas. Half of the cases belonged

to the low social class, followed by the middle class and the very low class, all cases were housewives.

Jaundice in more than half of the cases (55%) was due to Hepatitis A Virus (HAV) infection (**Table 2**), 5 cases resulted from other types of virus hepatitis, and the remaining 4 cases (20%) were due to conditions related to pregnancy. Jaundice mostly encountered during the second trimester of pregnancy (45%) followed by the first trimester (35%). History of previous abortion (**Table 3**) was reported only in 20% of cases, the sequence of the current pregnancy was the first or the second in 70% of cases. Only 3 cases reported previous prematurity or still birth during their reproductive life.

Table 3 demonstrated the medical history of the studied cases; where it appears that 2 cases took anti-schistosomal intra-venous medications some years ago which may contribute for the resultant infection with hepatitis C virus to one of them. No significant history was given against

hepatotoxic drugs except for one case, who mentioned that she got experience with Rifampicin. During the course of the current pregnancy, many cases stated that either antipyretics or anti-emetics were taken (55% and 50%, respectively), few cases mentioned that they used antibiotics, only one case was on regular treatment with anti-hypertensive drugs before and during pregnancy. The only case reported clinical jaundice prior to current gestation was the one with HCV, but 20% of cases mentioned that another family member had clinically diagnosed jaundice.

Two-thirds of cases with HAV and HEV gave a possible history of the source of their infection, cases suffer HBV or HCV also gave in most instances history of a potential blood borne risk that may contributed to their infection (**Table 4**).

Laboratory testings were illustrated in (**Table 5**) where abnormal results seen on microscopic blood examination, biochemical tests, as well as on clinical and abdominal ultrasound assessment done to cases of this study.

DISCUSSION

Current epidemiological knowledge support that jaundice during pregnancy is a rare clinical condition occasionally with serious outcomes to both mother and baby⁴. Sarkar *et al.*⁶ found out in their study in Bangladesh that possibility of jaundice during pregnancy in a developing country was around 1 in 429 pregnancies.

In this study; acute virus hepatitis was reported in 70% of all cases, this coincides with the results revealed by Hunt and Sharara⁷ and Ghazli *et al.*,⁸ who estimated that acute virus hepatitis was the cause of about 80% of jaundice that accompany pregnancy. They stated that the course of pregnancy is unaffected by acute viral hepatitis except in acute HEV where maternal and foetal mortality rates are significantly increased. Chronic HCV infection was found to cause jaundice in 2 of the studied cases, there is agreement that chronic liver disease or cirrhosis exhibits a higher risk of foetal loss during pregnancy⁷.

On the other hand, rare causes of jaundice which are particular to pregnancy are hyperemesis gravidarum in the 1st trimester, HELLP syndrome, cholestasis of pregnancy, and toxemia of pregnancy that occurs during the 2nd and 3rd trimesters. They counted for only 20% of cases in this study. Cheik *et al.*,⁹ mentioned in their study other rare causes like acute fatty liver of pregnancy (AFLP), hepatotoxic drugs, Budd-Chiari syndrome, auto-immune hepatitis, biliary tract disease, and cholelithiasis.

Results of current work revealed that 80% of cases were young (aged 20-30 years), which is the age of child bearing period in relation to age of marriage and family control in our community. Similarly, Tripti and Sarits¹⁰ in India reported that 83% of cases were at the same age group. They found that 58.5% of cases are from rural areas compared to 50% in this study. A lower rate (70%) was reported by Sarkar *et al.*,⁶ who studied also 20 jaundiced pregnant women. Three-quarters (75%) of cases in our study were of middle and low social classes,

which goes with results done by other researchers.^{6,10} The high social class usually seeks medical care through the private health section.

Occurrence of jaundice in this study was mainly in the 2nd trimester (45%) followed by the 1st and 3rd (35% and 20%, respectively). On contrary to other studies^{6,10} which showed predominance in the 3rd trimester even up to 95% of cases with almost similar distribution of causes.

Cases of HAV and HEV in this study gave history in most instances (75%) of incriminated food stuff; usually this is the situation in developing countries^{6,10} with low level of environmental sanitation especially with almost all cases belonging to the middle or low social classes. Most cases (75%) with HBV and HCV gave positive history for a blood borne risk factor of infection that conceded with the known literature.¹¹

A history of a hepatotoxic drug (Rifampicin) taken by one of our patients suffers hyperemesis gravidarum before she knows about the pregnancy, and this may

contribute to the development of her jaundice, as it is uncommon for women with hyperemesis to develop jaundice.¹² History of IV anti-schistosomal treatment was given by one HCV case and toxemia of pregnancy (pre-eclampsia) in the second case, which may explain jaundice if toxemia overlap a pre-existing schistosomal hepatic fibrosis. Other drugs taken by 70% of patients in this study are to be explained by their attempt to control morning sickness in early pregnancy, or to control symptoms in the early prodromal stage of virus hepatitis.

In the current study, 80% of cases got no previous history of abortion, 70% declared that the current pregnancy is either the 1st or the 2nd (Gravida), these findings are on the same trend with similar studies.^{6,10}

Clinically and by ultrasound it was found that most cases (90%) got hepatomegaly with soft consistency, and 70% got tenderness, these results correlate with the etiological causes of jaundice as almost all cases got varying degrees of hepatitis. But on the other hand; another study¹⁰ counted

only 7.31% of cases with hepatomegaly, and 4.87% with splenomegaly compared to 40% in the current study. Microscopic and biochemical examination of the patient's blood revealed abnormally high levels of total bilirubin, AST, ALT, alkaline phosphatase, as well as anaemia in 55% of cases and thrombocytopenia in the only one case with HELP syndrome. These findings showed no significant difference with results obtained by other researchers.^{13,14}

In conclusion, this study is an attempt to update demographic characteristics, counts for cases and their etiological causes, and trying to report the current related risky exposures encountered during pregnancy in Alexandria. It also documents that there are many potential factors which are implicated in the etiology of jaundice during pregnancy. Proper preventive measures as environmental sanitation, safe water supply, proper sewage disposal, food hygiene, and vaccination against HAV and HBV could play a vital role if such measures are considered

Table 1: Distribution of cases according to their age and other socio-demographic characteristics

	(n=20)	%
Age:		
20 - 30	16	80
31 – 40	4	20
Mean \pm SD (Median) = 26.30 \pm 6.018 (24.00)		
Hospital of admission:		
Fever hospital	17	85
Shatby hospital	3	15
Place of residence:		
Urban	10	50
Rural	10	50
Socio-economic status:		
High	1	5
Middle	5	25
Low	10	50
Very Low	4	20
Occupation:		
Housewife	20	100

Table 2: Distribution of cases according to the cause of jaundice and trimester of pregnancy

Cause of jaundice	(n=20)	%	Number of cases according to trimester of pregnancy		
			1 st	2 nd	3 rd
Cause of jaundice:					
- Acute hepatitis A	11	55	6	4	1
- Acute hepatitis B	2	10	-	2	-
- Chronic hepatitis C	2	10	-	1	1
- Acute hepatitis E	1	5	-	1	-
- Hyperemesis gravidarum	1	5	1	-	-
- Toxaemia of pregnancy	1	5	-	-	1
- Cholestasis of pregnancy	1	5	-	1	-
- HELP syndrome	1	5	-	-	1
Total	20	100	7	9	4
Pregnancy state as a cause of jaundice:					
- No	16	80			
- Yes	4	20			

Table 3: Distribution of cases according to obstetric and medical history

Obstetric and medical history	(n=20)	%
History of pervious abortion:		
- No	16	80
- Yes	4	20
Sequence of the current pregnancy (gravida):		
- 1 st	8	40
- 2 nd	6	30
- 3 rd	3	15
- 4 th	3	15
Fate of previous deliveries:		
- Prematurity	2	10
- Still birth	1	5
- Full term babies	17	85
Drug history before pregnancy:		
- No significant related drug taken	17	85
- History of IV anti-schistosomal treatment	2	10
- History of hepatotoxic drug (Rifampicin)	1	5
Drug history during pregnancy:		
- No drugs were taken during pregnancy	6	30
- Anti-pyretics	11	55
- Anti-emetics	10	50
- Antibiotics	3	15
- Anti-hypertensive drugs	1	5
History of chronic diseases:		
- Absent	16	80
- Schistosomiasis	2	10
- Arterial hypertension	2	10
History of jaundice:		
- Previous history of clinical jaundice	1	5
- History of jaundice affecting a family member	4	20

Table 4: Distribution of the jaundiced cases according to possible risky exposures related to virus hepatitis

Possible Risky Exposures	Number of cases	%
Against HAV and HEV (n=12):		
- Absent	3	25
- Outdoors food and beverage consumption	8	66.6
- shellfish consumption	4	33.3
- Unsafe water supply	2	16.6
Against HBV and HCV (n=4):		
- Absent	1	25
- Blood transfusion	1	25
- Surgical interference	2	50
- Dental manipulations	3	75
- Endoscopy	0	0

Table 5: Distribution of cases according to their microscopic, biochemical test, clinical, and ultrasound examination results

Results	(n=20)	%
Complete blood count (CBC) results:		
- Normal	9	45
- Anaemia	11	55
- Thrombocytopenia ‡	1	5
Serum level of total bilirubin (mg/dl):		
- 1-	6	30
- 3-	7	35
- 5 or more	7	35
Serum level of ALT* (IU/L):		
- 40-	10	50
- 100-	5	25
- 200 or more	5	25
Serum level of AST ** (IU/L):		
- 40-	16	80
- 100-	3	15
- 200 or more	1	5
Alkaline phosphatase (KAU)*:		
- Below the upper limit of normal = 13 units	4	20
- 13 units or more	16	80
Liver size (clinically and by ultrasound):		
- Normal	2	10
- Enlarged	18	90
Liver tenderness (clinically);		
- Absent	6	30
- Present	14	70
Spleen size (clinically and by ultrasound):		
- Normal	12	60
- Enlarged	8	40
Presence of ascitis (clinically and by ultrasound):		
- Absent	19	95
- Present	1	5

‡ Low platelet count reported in the case with HELP syndrome, anemia was also seen.

* Alanine Transferase

** Aspartate Transferase

* King Armstrong Unit.

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