

SERO PREVALENCE OF HEPATITIS B VIRUS (HBV) INFECTION IN PREGNANT WOMEN OF DISTRICT BANNU KP, PAKISTAN

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خلاصہ

پینٹائس بی وائرس سے متاثرہ افراد پوری دنیا میں موجود ہیں۔ پوری دنیا میں اس وائرس سے متاثرہ افراد کی تعداد 2 بلین بنتی ہے جبکہ ہر سال 4.5 بلین متاثرہ مریض پوری دنیا میں رپورٹ ہوتے ہیں جس میں پاکستان سے متاثر ہونے والے افراد کی شرح 2.4% بنتی ہے۔ ہیپیٹائٹس بی کا وائرس جگر کے سرورسز اور Hepatocellular carcinoma کا سبب بنتا ہے۔ مورٹی طور پر اس وائرس کی منتقلی کی شرح 10% ہے لیکن پاکستان میں نوزائیدہ اطفال میں اس کی منتقلی کی شرح 60% ہے۔ پاکستان میں اس مرض کا پھیلاؤ خطرناک حد تک پہنچ چکا ہے۔ جس میں سے 3% ایسے شدید متاثرہ مریض ہیں جن کو انتہائی نگہداشت کے لیے ہسپتال میں داخل کرایا جاتا ہے۔ روز بروز اس بیماری کے پھیلاؤ میں اضافہ ہو رہا ہے۔ زیر نظر تحقیقی کام کا مقصد صوبہ خیبر پختون خوا میں ضلع بنوں کی سطح پر حاملہ خواتین میں اس مرض کی موجودگی کی شرح معلوم کرنا ہے۔ اس مقصد کے لیے 20 سے 50 سال کے درمیان حاملہ خواتین میں سے 636 نمونے اکٹھے کیے گئے۔ جن کا HBSAg by ICT (Immunochromatographic test) ٹیکنیک کے ذریعے بغور مطالعہ کیا گیا۔ 636 نمونوں میں سے 563 (89.1%) میں اس مرض کی تشخیص نہیں ہوئی جبکہ 69 افراد جس کی شرح 10.8 فیصد بنتی ہے ان میں اس بیماری کے اثرات مثبت پائے گئے۔ مثبت کیسوں کی بلند ترین سطح 36 سے 40 سال کی خواتین میں ریکارڈ کی گئی۔ اس مرض کی منتقلی کے بنیادی اسباب میں ناک اور کان کے چھید، دانوں کی جراثیم اور عام جراثیم کے علاوہ خون اور اعضا کی منتقلی شامل ہے۔ ضلع بنوں میں خون کی بہتر سکریننگ کے حوالے سے سہولیات کا فقدان اور عام عوام میں اس کے پھیلاؤ کے متعلق عدم آگاہی مرض کے پھیلاؤ کا اہم سبب ہے۔ جس کی وجہ سے یہ وائرس وسیع پیمانے پر حاملہ خواتین کو متاثر کر رہا ہے۔ مستقبل قریب میں اس مرض کے پھیلاؤ کو روکنے کے لیے ضروری ہے کہ خون کی سکریننگ کی بہتر سہولیات فراہم کی جائیں اور آلات جراثیم کو جراثیم سے پاک رکھنے کے سلسلے میں خصوصی توجہ دی جائے۔ حکومت اس سلسلے میں موجود قوانین کے نفاذ کو ممکن بنائے تاکہ ضلع میں غیر معیاری طبی سرگرمیوں کی روک تھام ممکن ہو سکے۔

Abstract

Hepatitis B virus is globally endemic throughout the world, with over 2 billion infected cases while 4.5 million are newly infected each year including about 2.4% from Pakistan. HBV is considered to be the primary cause of liver cirrhosis and hepatocellular carcinoma. There are 10% chances of parental transmission in acute phase but the infection rate in neonates is greater about 60%. Pakistan is at high risk of infection and 3% are chronic cases in which majority of cases are hospitalized and the rate of infection is raising day by day. The current research work was conducted in District Bannu to identify the rate of infection of HBV in pregnant women. A total of 636 samples were collected from pregnant women having age between 20–50 years. They were screened for HBsAg by ICT (Immuno chromatographic test). Out of total 636 samples, 89.1% (567) were negative for HBV infection and 10.8% (69) were sero positive for HBV infection. The highest rate of infection was found in patients of age group of 36-40 years. The main risk factors observed were tattooing/piercing, dental surgery, general surgery, reuse of syringes, drug addiction, blood donation and organ transplantation. Lack of proper blood screening facilities in district Bannu and the lack of awareness about the possible routes of transmission of HBV are contributing a great deal toward the spread of infection among the pregnant women. Proper sterilization and screening procedure must be made to avoid a far bigger threat of more HBV infection in near future. Government should implement the law and check the unqualified health care working in different parts of the district.

Key words: District Bannu; HBV; Pregnant women; Risk factors.

Introduction

Hepatitis B is a highly contagious disease found throughout the world. Approximately, 780,000 individuals died as a result of HBV (WHO, 2009). The Pakistan Medical Research Council presented a report on prevalence of HBV in general population of Pakistan as ratio of 2.4% in 2009 (Ali *et al.*, 2009). In endemic areas the prevalence ratio of HBV is greater where infected mothers are highly responsible for the transmission of HBV (Amsalu *et al.*, 2018). The reason behind the greater ratio of cases is lack of health facilities and poor awareness (Ali *et al.*, 2011). The HBV in pregnant women mainly affect the pregnancy leading to spontaneous abortion, premature delivery, intra uterine growth restriction, and low birth weight infants (Aba *et al.*, 2016). HBV is double stranded DNA enveloped virus belongs to family *Hepadnaviridae* (Mahoney, 1999).

Inflammatory cell present in the tissues of the organ so whenever hepatitis is caused then inflammation occurs in the livers donated as hepatitis B (Ryder *et al.*, 2001). Hepatitis is caused by hepatitis viruses throughout the world but it may be caused due to toxin (alcohol, plant and medicine) and immune diseases (Ahmedin *et al.*, 2004). The basic goal of hepatitis B vaccination is to reduce the infection of HBV of liver cirrhosis and hepatocellular carcinoma (Chang *et al.*, 1997). The information about the control of rapid transmission of HBV in pregnant women is highly serious condition throughout the world (Moghaddasifar *et al.*, 2016). In this regard the diagnosis of pregnant women for HBs Ag is much important for the rate of mortality and natality in pregnant women (Mast *et al.*, 2005).

There are two phases of HBV infection in women during pregnancy, acute and chronic. The acute infection is about 6 months while the prolong infection which is more than 6 months is known as chronic infection. There are 10% chances of parental transmission in acute phase. But the infection rate in neonates is greater about 60% (Jonas, 2009). In chronic case, the immune system is weak and mostly occurs in infants and young children (WHO, 2002). The carrier rates are greater than 5%, parental transmission is common in endemic areas in case of mother is positive to the infection (Zhang *et al.*, 2014). Pakistan is at high risk in prevalence in case of HBV (Noor *et al.*, 2008).

According to the recent research Pakistan becomes at high risk of HBV among the developing countries of world. While in the report of Pakistan Medical Research Council, 2007, at the national level of Pakistan, the prevalence rate of HBV is about 2.5% (National, 2007). The rate of infection of HBV is still rising between the general population of Pakistan because of improper health facilities and lack of awareness (Hepatitis prevention & control program Sindh, 2009). The recent research reports in Pakistan show that prevalence of HBV in new born babies is raised because the mother in third trimester are more susceptible for HBV virus (Patton and Tran, 2014). There are various genotypes (A, B, C, D, E, F, G, H, I, J) of HBV throughout the world in which the genotype E and F are recorded for the first time in Pakistan, Uncommonly the genotype C is most prevalent among all types of genotypes. In Punjab, Baluchistan and Khyber Pakhtunkhwa B and C are mostly dominant but in Sindh the genotype A is dominant. Pakistan is at high risk of infection and 3% are chronic cases (Noor *et al.*, 2008) in which majority of cases are hospitalized (Attaullah *et al.*, 2011) and the rate of infection is raising day by day (Ali *et al.*, 2011).

Majority of HBV cases are due to sharing of personal items, unsterilized blood donation, tooth extraction, general surgery, use of unsterilized injections, sexual contacts with HBV positive person, and skin tattooing (Awan *et al.*, 2012). The prevalence rate of HBV is at high risk in prostitutes females of Lahore as well as also at high risk in Bahawalpur because of positive HBV blood donors (Khan *et al.*, 2006). In children the injection process also plays a key role of HBV transmission (Khan *et al.*, 2009). The infection is transmitted from mother to child during birth (Kazmi *et al.*, 2003).

In well developed countries the proper vaccination has decreased the HBV reports in great decrease because of initial immunization introduction (Zanetti *et al.*, 2008). Approximately 90% children are infected in first several years of life, 30 to 50 % are infected in next 4 years and 25% adults are infected in chronic stage and dies because of liver while 21% individuals die because of HBV (El-sheikh *et al.*, 2007). In view of the above genuine facts the current research was conducted with main aim to demonstrate the sero prevalence rate of HBV infection in the pregnant women of district Bannu.

Materials and Method

The current study was conducted in various areas and localities of District Bannu, Khyber Pakhtunkhwa, Pakistan. Data was collected from pregnant women suspected for HBV infection referred to by the physicians and gynecologists. For diagnosis of the disease 5ml venous blood was taken through sterilized disposable syringe and serum was separated by using centrifuge machine and then tested through ICT (immuno-chromatographic test) according to the manufacturer's instructions. The data was analyzed by using latest Microsoft Office Excel Program. The results were expressed in percentages.

Results and Discussion

Blood samples were collected from pregnant women from local hospitals and clinics of district Bannu, Khyber Pakhtunkhwa, Pakistan. Total 636 samples have been collected from pregnant women with age between 20-50 years. Out of total 636, 10.8% (69) Females found to be infected with HBV. Among these 636 women 89.1% (567) were negative for the presence of HBsAg. According to the study, 3 pregnant women (2.3%) were of age between 20-25 years, 18 pregnant women (10.5%) were of age between 26-30 years, 6 pregnant women (8%) were of aged between 31-35 years, 30 pregnant women (17.2%) were of age between 36-40 years, 9 pregnant women (15%) were of age between 41-45 years, 3 pregnant women (11.11%) were of age between 46-50 years and no pregnant women was detected in age less than 20 years. The rest of all were found negative for HBV infection (Table 1).

Table 1. Age-wise prevalence of HBV in pregnant women

Age group (Years)	Samples collected	HBsAg Positive	Percentage
20-25	129	3	2.3%
26-30	171	18	10.5%
31-35	75	6	8%
36-40	174	30	17.2%
41-45	60	9	15%
46-50	27	3	11.11%
Total	636	69	10.8%

Among 636 pregnant women, 24 belonged to urban areas, in which no pregnant women were HBsAg positive, 39 pregnant women belonged individuals to semi-urban areas with zero pregnant women for HBsAg positive. Similarly, 573 pregnant women belonged to rural areas of district Bannu. Among these 573 pregnant women, 69 (12.85%) were found positive for HBsAg and the remaining 504 were found negative for HBsAg (Table 2).

Table 2. Area-wise prevalence of HBV in pregnant women

Area	Samples collected	HBsAg Positive	Percentage
Urban	24	0	0%
Semi urban	39	0	0%
Rural	573	69	12.85%

HBV is one of the most dangerous health problems throughout the world. The transmission may be occurred from parental contact and from HBV positive mother to the baby at birth ((Frenco *et al.*, 2012). In case of parental transmission the chance may increase in third trimester especially (Metaferia *et al.*, 2016). In pretreatment era when the drugs were not available then it was measured as a most effective health incidence throughout the world. Sexual contract sexual intercourse and parental care were the key sources of transmission from mother to child or from mother to infant. HBV infection is depended upon the age of the individual, infant and young ones are most likely to develop chronic infection (WHO, 2002).

Over 2 billion people are affected with HBV in which 350 million people have been chronically infected (El-Serag, 2012). While annually 50 million cases have been reported throughout the world (Perrilo,2006). The world has been divided into two categories such as low endemic areas in which the developed countries have been documented while in high endemic areas the developing countries have been recorded (Wright, 2006; Lavanchy, 2004). Commonly the frequency of HBV has been contingent on the economic development and insufficient health recourses. The prevalence of HBV have been divided in to 3 regions accordingly which was low <2% , intermediate 2-8%, high >8 (Wright, 2006). According to the above prevalence ratio the region was divided as following 0.1% - 0.5% (>2%) in low prevalence areas (US, Canada , Northern , Western and central Europe, Australia and New Zealand) , to 2-5% in intermediate prevalence areas (Mediterranean region, Eastern Europe, Russian Foundation, Japan , Middle East, Central and Southern America) to 8-20% in high endemic areas (Sub-Saharan Africa, South east Asia: Southern China , Taiwan & The Pacific rim) (Maynard, 1990; Margolis *et al.*, 1991).

The crucial health problem throughout the entire world in all countries, including Pakistan is viral hepatitis (Haq *et al.*, 2013). HBV infection amongst concerned women is transferred through insufficiently decontaminated medical application, reuse of syringes and squalid environment (Butt *et al.*, 2010). The results were compared with other cities of Pakistan, which are estimably 6% (Hussain *et al.*, 2017). In as much as the finding of the present study is higher than other cities which are estimably 10.8%. The widespread ratio of HBV infections pregnant women is to a high degree owing to the use of disinfected application used during delivery due to prior surgical operation (Aslam *et al.*, 2016). This is also occurred because of low medical predicament namely reuse of syringes and unhygienic ear and nose penetrating, destitution, lack of awareness and lack of knowledge (Abas *et al.*, 2000).

HBV infection is not declining in common population. In our present research 636 pregnant women were studied whose age between 20-50 years. Women were classified into six different groups on the basis of their age. Age groups were 20-25 years, 26-30 years, 31-35 years, 36-40 years, 41-45 years and 46-50 years. Women aged between 36-40 (17.2%) years have the greatest tendency towards HBV. According to new studies 15% women were effected having ages between 41-45. While in ages of 46-50 the HBV tendency is about 11.11%. The forth great tendency were found in ages of 26-30 which is about 10.5% while the fifth HBV infection rate between 31-35 were 8% and the lowest ratio was found between the ages of 20-25 which is about 2.3%. This is mainly because of high fertility rate. During this age the presence of high ratio in pregnant women is due to mainly malnutrition, unhygienic condition, poverty-ridden and basic religious ignorance. Thus the total ratio

was estimated about 64.11% which was greater than the estimated ratio (Hussain *et al.*, 2017) in which the greater ratio was found in age of 25-26 which is equal to 51.1% . The American congress of Obstetrics and Gynecology suggested that every pregnant female should perform the screening of HBV. All the new born babies require the vaccination series and Hepatitis B Immunoglobulin within 12 hours of birth (ACOG, 2007).

Conclusion

It is concluded that there is a shocking number of increased HBV infected women in Bannu and particularly the ratio is higher in pregnant women. Precautionary measures should be taken which should include safe blood transmission and latest techniques for sterilization, use of disposable syringes must be encouraged for public safety. It is recommended that sophisticated procedures should be adopted during surgical measures or treatments because there is a great tendency towards infection.

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