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**Seroepidemiology of Rubella, Measles, HBV, HCV and  
B19 Virus Within Women in Child Bearing Ages  
(Saravan City of Sistan and Bloochastan Province)**

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**Abstract:** Present survey basically focused on women between 15-45 years of age resident in a town of Sistan and Baluchistan province named as Saravan city located in border of Pakistan-Iran in order to find out the seropositivity against the viruses in child bearing ages in the above stated under study community. This descriptive cross-sectional study was carried-out from 2001 up to 2002. Saravan town was divided into 4 geographical areas and each area was further sub-divided into 10 blocks and in each block 10 families were chosen randomly. In the next step by referring to each family from the chosen married women with specified age i.e., 15-45 years, 5 mL blood was collected. Serum was then separated and stored at -20°C before the assay. ELISA kit was employed to detect anti B19, anti rubella, anti measles, anti HBV and anti HCV antibody. Furthermore during samples collection a questionnaire filled for each woman under study. This study showed that 89.6% of women understudy were seropositive against measles, rubella (96.2%), B19 (59.2%), HCV (0.8%) and HBV (19.8%), respectively. According to the results of no serious problem with rubella in this area; But, about measles, the present immunity against measles in this area is insufficient. It seems that incidence of B19 infection in this region is same as other places in Iran. The rate of seropositivity against HBV and HCV indicated of these viruses circulating in the population in this area.

**Key words:** Rubella, measles, HBV, HCV, B19, sistan and Baluchistan

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## INTRODUCTION

Viral diseases are major health problems worldwide. Although rubella is a mild disease; but when a woman involves with during her pregnancy, it may be transferred to her fetus in a hazardous risk mode. It may result in conditions as blindness, deafness, cataract, congenital encephalitis and mental retardation (Cradock-Watson, 1991; Dwyer *et al.*, 1992). Based on reports from the country (1958) Tehran, east Azerbaijan, Ahvaz and Gorgan, it is conclusive that women in child bearing ages (15-45) are more susceptible than others (Saidi, 1972; Moradi and Mokhtari-Azad, 2000). Measles is not a major health problem in childhood, but it may be so hazardous in ages over 15. Despite its hazard, it is a preventable disease by vaccination. Reports show that 4% of over 30 years old women in Netherlands, 2% of over 40 ones in Norway, 28% of pregnant and non pregnant women in Zimbabwe and 4% of American 10 up 30 years old ladies had not been vaccinated against the agent (Janaszek *et al.*, 2000; Flugsrud *et al.*, 1997; Obi *et al.*, 1996; Cohn *et al.*, 1994; Willy *et al.*, 1994). B19

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virus is as precarious in an immune deficient patient as in an individual with blood disorder or during pregnancy. It may result in conditions such as fifth disease, crisis of transient anemia, pure red cell aplasia and congenital red blood cell aplasia and hydrops fetalis. Chronic infection of adults especially in women may be associated with rheumatoid arthritis; while fifth disease is more common in childhood (Marshall *et al.*, 2001). Infection caused by this virus needs to be considered seriously in child bearing ages and especially in pregnancy (Belloy *et al.*, 1996; Brown and green, 1994). Women in child bearing ages possess antibodies against B19 virus and based on reports from Australia, Kuwait and Greece its rate is reported to be 64, 53.3 and 57.8% of them, respectively. Two studies that carried out in Iran are present study and one that has performed in Pasteur institute (Karunajeewa *et al.*, 2001; Maksheed *et al.*, 1999; Kyriazopoulou *et al.*, 1997; Modares *et al.*, 2001).

It's estimated that almost 170 million peoples are carriers for chronic hepatitis C all over the world and its incidence is ranging from 1% in countries as Island and Norway up to 18.1% in Egypt (Anomyous, 1997). Reports show that almost 19% of young individuals (10-19 years old) and 60% of over 30 years' old ones have produced anti HBC antibodies in their serums (Darwish *et al.*, 2001). This range had been reported to be 4.8% in Greece, respectively (Lionis *et al.*, 2000).

There had been 350 million carriers of HBV with mortality rate of about one million annually in year 2000 (WHO report) and pregnant carriers may involve almost 25-30% of their neonates that about 70-90% of them act as carriers, consequently (WHO/EPI/GEN/90.6).

Infection with HB and HC viruses and consequent complications such as cirrhosis, hepatocellular carcinoma are thoroughly clarified.

Hepatitis B, measles and rubella infections all are infectious diseases that could be extremely preventable. For this, seroepidemiological data can be used; but in order to design health plans and adopting better trends as vaccination and health care education policies in the region.

There is no kind of vaccine to prevent hepatitis C and B19 virus infectious diseases; so related seroepidemiological data together with health care education programs focusing on viral transmission pathways and knowledge about preventing it could be so useful in the area.

## **MATERIALS AND METHODS**

Present cross-sectional study was carried-out from 2001 up to 2002 in Saravan city (Sistan and Baluchistan province). After calculation of sample size, Saravan city was divided into four parts geographically and then, each area sub divided into 10 blocks. From 10 families as residents of those blocks (10 blocks), married ladies over 15 years old in child beaming period (below 45), were informed about the aims of the project. After aspiration of almost 5 mL blood sample from each, serum was separated and stored at -20°C until performing the tests. A questionnaire was filled voluntarily by each participant. Anti-body screening against rubella, measles, HBV, HCV and B19 were determined by the means of (Radim) ELISA kits.

## **RESULTS**

Out of 365 studied subjects, 216 cases (43.3%) were categorized in 15-25 years age group and 103 cases (20%) in 36-45 years age group. From the studied cases, 17.3% had a history of deceased child and 22.7% had faced with abortion during their pregnancy experiments.

47.7% of cases were illiterate and 32.6% were in primary school education levels, 8.5% high school level and 8.5% of them had high school diplomas; while 2.5% had been graduated in university. 43.2% had 1-3 children, 29%; 4-6, 11% more than 6 and 17.8% had no children. 36.6% had no pregnancy experience. 36.6% had been married before 1-5 years ago, 18.7%; 5-10 and 51.6% were more than 10.

Table 1: Distribution frequency of anti-viral anti-bodies (Measles, Rubella, HBV, HCV and B19)

Age group	Frequency	Anti-body positivity				
		Measles	Rubella	HBV	HCV	B19
15-25	Count	129	149	27	1	88
	Percent	(81.6%)	(81.6%)	(15.8%)	(0.6%)	(55.7%)
26-35	Count	126	133	32	2	80
	Percent	(94%)	(99.3%)	(21.1%)	(1.5%)	(59.7%)
36-45	Count	72	69	20	-	48
	Percent	(98.6%)	(94.5%)	(26%)	-	(65.8%)
total	Count	327	351	79	3	216
	Percent	(89.6%)	(96.2%)	(19.8%)	(0.8%)	(59.2%)

Immunization was shown to be in 89.6%, 96.2% and 59.2% for measles, Rubella and B19 virus, respectively.

In regard to this study, 0.8% of cases were positive for HBsAg, 0.8% for HCV Anti-body and 19.8% for HBV Anti-body, respectively (Table 1).

## DISCUSSION

Results of this study revealed that only 81.6% of studied cases in 15-25 years old age group had antibodies against measles (Anti-body positive) and regarding to this and the fact that 89.6% of studied subjects in whole were antibody positive against this virus, it is probable that 15-25 years age group women, being at risk of this infectious agent, more than others. This may involve neonates of antibody negative mothers and subsequent enhancement of vaccination policies in the region, by causing to revise their plans of targets in susceptible age group vaccination designs.

This matter had been proven according to our previous such study targeting with a result of 3-5 years old age children up to 63% antibody positivity rate (Moradi *et al.*, 2001).

As the results of this survey revealed, only 3.8% of studied subjects lack anti-bodies against rubella and 17.3% of them had experienced deceased child at least once in their pregnancy.

There was significant correlation between experience of deceased child and presence of antibody against rubella ( $p = 0.024$ ); although we can't conclude this regarding to this study.

Results of this study revealed that 59.2% of studied cases were B19 anti-body positive that was different from results of a survey accounting to be 93 in Tehran (it may be on error due to data collection as lack of non-compiled data) (Modares, 2001).

B19 virus was responsible to almost 30% of Hydrops fetalis, 10% of fatal death and known as one as etiological factors of fetal death. In regard to present study, 17.3% of studied cases were faced with deceased child during their pregnancies.

Immunization against the virus and occurrence of deceased child, was statistically significant ( $p = 0.003$ ); so this could be considered as etiological factor of child loss in studied cases. Based on low incidence rate of HCV Anti-body in the region (0.8%); it may not seem to act as a serious problem, but according to variety numbers of transmission ways and its higher incidence rate in comparison with other reports, it should be considered as an alarm in order to establish education schedules for not to be infected with the virus.

Incidence of HBV infection (HBsAg positive), was about 0.8% that is lower than reports from Sistan and Baluchistan province (Salehi *et al.*, 2001).

Prevalence of HBV Anti-body was 19.8% and based on reports from other parts of the country, it had been reported 25- 30%. Mothers infected with this agent are at risk of transmitting to their fetuses (25-30%) and as infected neonate may act as a carrier (70-90%) and as less than 1% of ladies

(15-45 years old) in child bearing ages, had claimed that they had not been vaccinated against HBV, so it is concluded that the virus is flowing over the society, expanded, it would be essential to the society to be educated both in preventing by acquiring the knowledge of importance of vaccination.

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