

Letter to the Editor

Seroprevalence of cytomegalovirus, herpes simplex virus and rubella virus among pregnant women in KPK province of Pakistan

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Dear Editor,

A large proportion of infant and maternal deaths are caused by infectious diseases worldwide, especially in developing countries due to poor socio-economic conditions [1]. Pakistan is the high ranked country with pregnancy related deaths (260 deaths per 100,000 live births) [2]. Neonatal deaths account for 40% of deaths under 5 years of age worldwide [3] and 36 % of neonatal deaths are due to infections [4]. Pakistan with an estimated 41 and 70 deaths per 1000 for neonates and infants annually, accounts for 7% of global neonatal deaths [5]. Causes of death in newborn and pregnant women vary by country and are largely related with availability and quality of health care. This very high maternal and neonatal mortality rate led us to set up the present study to determine the prevalence of cytomegalovirus (CMV), herpes simplex virus (HSV) and rubella virus in pregnant women in Khyber Pukhtoonkhwa (KPK), a province of Pakistan, located in the north-west of the country. These viruses cause serious illnesses or death to infected mothers, fetus or neonate. Newborns infected with rubella virus may have birth defects such as blindness, hearing loss and mental retardation. Rubella infection during pregnancy results in spontaneous abortions in 65%-85% cases [6]. Congenital CMV also causes similar birth defects: hearing loss, mental retardation and retinochoroiditis. Approximately 30% of infected infants die due to congenital CMV [7]. Congenital HSV infection may lead to external infection of the newborn skin, eyes, and mouth as well as causing

central nervous system (CNS) infections (encephalitis), or disseminated infection involving several organs such as the brain, liver, and lungs. A large number of HSV infected infants die in early age [8].

We enrolled 145 pregnant women from KPK province and screened their sera for rubella, CMV and HSV antibodies at Biotech Medical Laboratory and Research Center, Islamabad. Medical history was taken through a consent form and study subjects who had been previously infected with these viruses were excluded from the study. Since medical records were not available self-reporting by study participants was the only source of information

Our results indicated a very high prevalence of these viruses (Table 1). The percentage prevalence of triple co-infection, double co-infection, single infection, is shown in Table 2. The extremely high seroprevalence of anti-rubella antibodies among study subjects is probably due to an effective vaccination programme and can be assessed as natural immunity. As the results showed a very high anti-rubella IgG seropositivity in this area, routine anti-rubella IgG screening or rubella catch-up vaccination for all women of childbearing age is not necessary in this province. Pregnancy screening for CMV and HSV is recommended to manage the complications caused by these viruses. Rubella, CMV and HSV can be an important factor of pregnancy and complications may influence maternal health and even cause maternal deaths.

Table 1. Prevalence of rubella, CMV and HSV among pregnant women from KPK province, Pakistan.

Virus	Total subjects(n)	Seropositive(n)	Seroprevalence (%)
Rubella	145	121	83.4
CMV	145	137	94.5
HSV	145	68	46.9

Table 2. Co-infection prevalence of rubella, HSV and CMV among study subjects.

Co-infection	Total study subjects(n)	Co-infected individuals(n)	% co-infection
Rubella+/CMV+/HSV+	145	64	44.1
Rubella+/CMV+/HSV-	145	52	35.8
Rubella+/CMV-/HSV+	145	1	0.7
Rubella-/CMV+/HSV+	145	3	2.1
Rubella+/CMV-/HSV-	145	4	2.8
Rubella-/CMV+/HSV-	145	18	12.4
Rubella-/CMV-/HSV+	145	0	0
Rubella-/CMV-/HSV-	145	3	2.1

Vertical transmission of these viruses can play key role in neonatal/infant morbidity and mortality in Pakistan. Health care practices during pregnancy are very limited in rural areas of KPK province, especially in tribal areas. This pilot study raises some important questions regarding the source of transmission of these viruses, their vertical transmission profile and their role in mother/infant health issues and mortality. It is also important to identify the etiologic agents associated with high maternal and infant deaths in Pakistan. To our knowledge this is first report from Pakistan and gives clues regarding the seroprevalence of the infectious agents in Pakistani pregnant women. Further studies on larger scale are needed to accurately estimate the pregnancy related complications due to these viruses. By knowing the underlying reasons behind the higher risk of pregnancy related morbidity and mortality, policy should be implemented to train health care workers in order to provide appropriate care to pregnant women.

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