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The prevalence of antibodies against rubella in pregnant women in Kerman, Iran

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Rubella is an innocuous viral infection, due to its teratogenic effects; if acquires during pregnancy, its responsible for serious fetal problems such as congenital rubella syndrome, which includes severe

disorders such as cataracts, glaucoma, blindness, deafness, cardiovascular disorders, bone lesions, blood disorders, pneumonia, encephalitis, growth retardation and chromosomal abnormalities. The involved fetus may be asymptomatic at birth and disorders such as progressive panencephalitis and diabetes occur in following years.¹ Researches from 1986 to 1997 showed that immunity against rubella in non-pregnant Iranian women was 78-97% and among pregnant women was 72-91.2%.² Vaccination against rubella is not a part of Iran's public vaccination program and therapeutic abortion in our country is illegal thus, recognition and vaccination of susceptible women seemed necessary. A cross-sectional prospective study was carried out in 1999. Anti-rubella immunoglobulin G (IgG) and IgM in the sera of 410 volunteer Iranian pregnant women were titrated by enzyme linked immunosorbent assay (ELISA). The presence of anti-rubella IgM and the amount of anti-rubella IgG by using RADIM kits (RADIM Company, Florence, Italy) was determined. Immunoglobulin G values greater than 15 mlu/ml were considered protective titer. Chi-square, t-test and Fisher exact tests were used to analysis. A *p* value of <0.05 was used as a limit of significance. The age spectrum for women was 15-48 years (average 26.5). Fifteen percent of subjects were jobholder and the remaining were housewives. Approximately 77% of women were urban residents and the rest of them were rural residents. In all subjects, anti-rubella IgM was negative, anti-rubella IgG (>15 mlu/ml) was positive in 94.6% and negative in 5.4% of cases. The average age for positive titer

Table 1 - Comparison of the presence of anti-rubella antibody based on the variable: age, occupation, place of residence and duration of marriage.

Antibody/ Variables	Negative		Positive		Total		Statistical difference
	Frequency	%	Frequency	%	Frequency	%	
<i>Age (years)</i>							
15-20	5	1.2	49	11.9	54	13.2	<i>p</i> >0.05
21-25	6	1.5	139	33.9	145	35.4	
26-30	5	1.2	105	25.6	110	26.8	
>30	6	1.5	95	23.2	101	24.6	
Total	22		388		410	100	
<i>Occupation</i>							
Housewife	15	3.7	334	81.5	349	85.1	<i>p</i> <0.05
Jobholder	7	1.7	54	13.2	61	14.9	
Total	22		388		410	100	
<i>Place of residence</i>							
Rural	3	0.7	90	21.9	93	22.7	<i>p</i> >0.05
Urban	19	4.6	298	72.7	317	77.3	
Total	22		388		410	100	
<i>Duration of marriage (year)</i>							
1-5	11	2.7	214	52.2	225	54.9	<i>p</i> >0.05
>5	11	2.7	174	42.4	185	45.1	
Total	22	5.4	388	94.6	410	100	

group was 26.5 ± 5.7 and for negative titer group was 27.5 ± 8.3 . The mean titer of anti-rubella IgG was 80.3 ± 56.8 mIU/ml (range 0-250.4 mIU/ml). **Table 1** shows the comparison of the presence of anti-rubella IgG antibody based on the variable; age, occupation, the place of residence, and the duration of marriage. This study revealed no statistically significant difference except for occupation. Immunity to rubella (94.6%) was greater than previous studies in our country but laboratory methods were different in some of them. Absence of anti-rubella IgM implies the absence of acute or recent infection in the subjects. The result of our study was similar to the result of Italy in 1999.³ Black and Berman⁴ showed that the titer of anti-rubella antibody in most developing countries is as high as in the United States of America (USA) but the immunity is lower in Taiwan and Brazil. Generally in urban and industrial areas with higher socio-economic levels, the number of susceptible women of child-bearing age is higher compared to other regions, but in our study there was not any significant statistical difference between urban and rural areas, which could be due to the closeness of health services to the residence of pregnant rural women and they had similar conditions with urban residents. In this survey, the relation between immunity and age was different from Vulver³ in Italy and this difference may be significant if our sample size becomes larger. Immunity to rubella was higher in housewives (95.7%) than jobholder women (88.5%), which could result from living in crowded families with lower socio-economic condition in housewives. Our study did not show any relation between type of occupation and immunity but Ferson and Robertson⁵ showed that the majority of healthcare workers had immunity against rubella, the reason may be the availability of rubella vaccine in the USA since 1969, additionally the chance of being involved by rubella and acquiring immunity is greater in health care workers which is due to the work conditions. This research showed that despite the presence of high immunity of pregnant women to rubella virus, it is not adequate. Concerning the reports from other parts of our country we suggest to recognize and vaccinate the sensitive individuals.

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Tepid blood versus cold crystalloid cardioplegia in cardiac protection

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The use of blood cardioplegia, as compared with cold crystalloid solutions has been proposed for myocardial protection but optimal temperature and interval of antegrade infusion remain controversial.¹ In this study, we designed to compare intermittent antegrade tepid blood (TB) with cold crystalloid cardioplegia (CC) in terms of myocardial protection in patients undergoing elective myocardial revascularization. From September 1999 to June 2000, 137 consecutive patients underwent coronary artery bypass grafting (CABG) were enrolled in this study. All patients had 2 or 3 vessel coronary artery disease with preoperative left ventricular ejection fraction of >30% in single-plane contrast ventriculography. Patients undergoing reoperation for myocardial revascularization and combined coronary and vulvar surgical procedures were excluded from the study. With approval of the hospital research committee, the patients were randomized into 2 groups. Group I (n=65) received TB cardioplegia and group II (n=72) received cold CC. In both groups, intermittent, antegrade infusion of cardioplegia via the aortic root was a common cardioplegic delivery technique. The operation was performed through a mid-sternotomy approach. Cardiopulmonary bypass was instituted at a flow rate of 2.4 L/minute per m² body surface area and body temperature was reduced to 28°C from 30°C by cooling on bypass in all patients. For preparation of high potassium TB cardioplegia, moderate hypothermic blood was taken directly from the oxygenator by a 1/4 inch tubing and crystalloid solution (KCl = 24 and Mgso₄ = 2.7 mmol/L in 5% dextrose in water) mixed by 4 parts of oxygenated blood with each part of crystalloid solution to deliver into the aortic root by means of roller pump. Crystalloid cardioplegia was prepared by dilution of 20 ml cardioplegia solution (Martindale Pharmaceuticals,