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Research Article

**RELAPSE DUE TO BACTERIAL INFECTION; BRUCELLOSIS  
& ASSOCIATED RISK FACTORS**<sup>1</sup>Dr. Waqas Haider, <sup>2</sup>Dr. Zahra Fayyaz, <sup>3</sup>Dr. Muhammed Hassan Arif<sup>1</sup>Rashid Latif Medical College Lahore<sup>2</sup>Central Park Medical College Lahore<sup>3</sup>Rashid Latif Medical College Lahore**Abstract:**

**Objectives:** The aim of this research work is to conclude the hazard features of deteriorating health condition among patients of bacterial infection disease brucellosis.

**Methodology:** The duration of this research work was from 2015 to 2017, in an institute of the infectious diseases Mayo Hospital Lahore. We considered one hundred and fifteen patients suffering of brucellosis. The detection standards were the outcome of greater than 1/80 with two mercaptoethanol greater than 1/40, in relationship with well-suited medical results as pain in back, temperature & high sweating. The cure from brucellosis with the help of standard scheduled medicines was managed. The assessment of the patients carried out at the last of the treatment & after 2, 4 and 6 months with the help of medical and examinations of the serums. Relapse patients & patients with no relapse were arranged into 2 groups. The information of the patients of both groups was compared with the help of SPSS software and method of chi square test.

**Results:** Out of one hundred and fifteen patients, exclusion of the twenty-two patients carried out due to the exclusion standard. Seventeen patients among the studied patients found with relapse, outcomes in whom are such as; twelve patients found with greater than 3 months' period of the signs before the detection. Hundred percent males were the victims of the relapses. Aging is also risk factor linked with the relapses. Lymphopenia was available in 11 patients. High amounts of ESR & CRP were available in sixteen & seventeen patients respectively. No important disparity in the regimen of antimicrobial regimen or lofty jeopardy occupation observed in those 2 groups.

**Conclusion:** The research work concluded that sex, aging, chronic infection & lymphopenia are the risk features of relapse due to bacterial infectious disease of brucellosis.

**Key Words:** Relapse Patients, Bacterial Infection Disease, lymphopenia, SPSS, aging, infection, NPB, assessment.

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**INTRODUCTION:**

Brucellosis has an impact on the populations in the countries which are under development as Middle East & Latin America [1]. It remained widespread in Pakistan for many years [2]. There are no specific signs & symptoms of this disease. Most common symptoms of this disease are high fever, sweating in night & arthralgia [3]. The separation of the brucellae from bone marrow, blood or some tissues is the requirement of the proper diagnosis [4]. Cultural assessments are very hazardous & time taking. Therefore, clinicians do not depend on the direct proof of the infection [3]. A multiplicity of tests in serology is in utilization, but the active infection requires the confirmation from at least two serological tests. Normally, STA (standard tube agglutination) is initially used and its outcome is confirmed by 2ME (2mercaptoetanol) with a ninety-seven percent sensitivity & hundred percent specificity [3, 5]. The main aim of the treatment for brucellosis is the improvement of the symptoms, (i) decrease in the amount of complications & the (ii) prevention of the relapses [4]. The amalgamation treatments suggested by WHO for the treatment of this disease are doxycycline + rifampicin or (i) doxycycline + streptomycin [4, 6]. The risk features (ii) for attainment of infection as eating of fresh cheese, (iii) contact with the skin of animal & eating of not fully (iv) cooked meat are mentioned in the previous research (v) works [1, 2, 4, 8, 9].

Brucellosis relapses are relying on different aspects as;

- (i) Disparity in the species of the Brucella.
- (ii) Depressed CMI (cell mediated immunity).
- (iii) Localised infection.
- (iv) There is a very long period between the emergence of the symptoms & start of therapy [4].

*Brucella melitensis* with propensity to make destruction of the tissues & localized infection ensuing in relapse is the most frequent *Brucella* from animals that are infected & human patients [2, 5, 10]. Not complete period of the treatment & cell-mediated immunity are conferred as risk features for relapses of brucellosis [11-15].

**METHODOLOGY:**

This study was conducted in the city of Lahore in Mayo Hospital Lahore on the patients suffering of these bacterial infections. The detection standard was the outcome of 1/80 or high STAT (standard tube agglutination titer) of brucella antibodies with a 2ME (mercaptoethanol) greater than 1/40, in relationship with medical results as pain in back, night sweating & high temperature. [5, 6]. After brucellosis detection, treatment of the patients carried out with

doxycycline + streptomycin or doxycycline + rifampicin or co-trimoxazole + rifampicin with a period of complete eight weeks [5,6]. A specific quantity of these medicines was provided to the patients for a specific period of time. Examination of the patients carried out at the final stage of the treatment & in 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> months of the treatment. 2ME method carried out if any relapse was expected.

The data of each patient was documented in chart for every patient as gender of the patient, age of the patient, living area, period after the onset of symptoms, profession, medical symptoms, the findings of the tests conducted in laboratory, antibiotics management & total period of the therapy & the outcome of the therapy as complete recovery or failure of the treatment. If any relapse occurred during treatment, it was also documented.

Inclusion standards:

Vigorous brucellosis,  
Age of the patient should be more than eighteen years.

Exclusion standards:

Not complete therapy,  
No complete follow ups,  
Conceive,  
febrile diseases other than this disease &  
Failure of the therapy.

At the last, we put patients in 2 groups. Group-1 includes the patients with complete recovery. Group-2 includes the patients with relapse. The comparison of the variables between both groups carried out with the use of SPSS software with the utilization of the T test and Chi 2 tests. P value of less than 0.05 was considered as significant.

**RESULTS:**

One hundred and fifteen were the total participants of this case study. Twenty-two patients were excluded from the research work because they were suffering from some other disease. In these ninety-three patients, seventy-three were male patients and twenty were females. The average age of the patients was 36.5±12.4 years. The range of the age was eighteen years to sixty years. More than sixty-six percent were living in city areas and more than thirty-three percent patients were living in non-urban areas. Relapses were available in seventeen patients. The period of the signs before detection was 9.7 ± 20.4 weeks with a range from one to one hundred and two weeks. In forty-two patients, the period of the signs was between 14 to 30 days. In thirty-six patients, it was 1 to 3 months & in fifteen patients, it was higher than 3 months. Some other results are available in Table-I & II. An important disparity in sex between both

groups was available. Ni disparity in the living areas was observed in the patients of both groups. There was no disparity in the utilization of the standard antimicrobial regimen between the members of both groups. Enhancements in the amounts of ESR & CRP are linked with high risk of relapse. The

reduction in the amount of the lymphocyte is linked with the risk feature. Increase in duration between start of the signs & start of the curing process is also linked with the increased jeopardy features.

**Table-I: Demographic Risk Factors for Brucellosis Relapse in Lahore 2015-2017**

Risk Factors		Relapsed (n=17)		No Relapsed (n=76)		P value
		No	%age	No	%age	
Age (years):	18-25	0.00	0.00	21.00	27.60	0.0470 (S)
	25-50	12.00	70.77	40.00	52.70	
	> 50	5.00	29.30	15.00	19.70	
Sex:	Male	17.00	100.00	55.00	72.40	0.0100 (S)
	Female	0.00	0.00	21.00	27.60	
Occupation:	High Risk	10.00	58.80	41.00	52.50	0.7900 (NS)
	Low/No	7.00	41.20	35.00	47.50	
Residency:	Urban	10.00	58.80	52.00	68.40	0.5700 (NS)
	Rural	7.00	41.20	24.00	31.60	
Site of infection:	SI joint	13.00	76.50	48.00	63.20	0.1500 (NS)
	Hip Joint	4.00	23.50	14.00	18.40	
	Other sites	0.00	0.00	14.00	18.40	
Missed timefor treatment:	<1 month	0.00	0.00	42.00	55.30	0.0001 (S)
	1-2 months	5.00	29.30	31.00	40.80	
	>2 months	12.00	70.60	3.00	3.90	

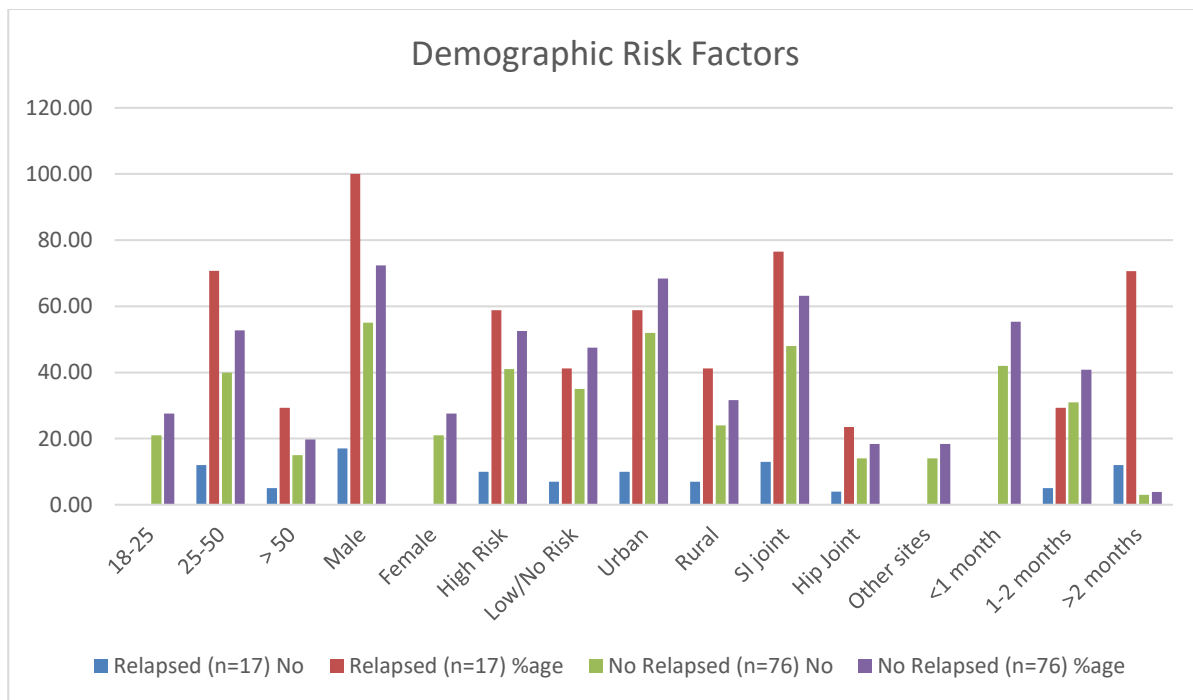
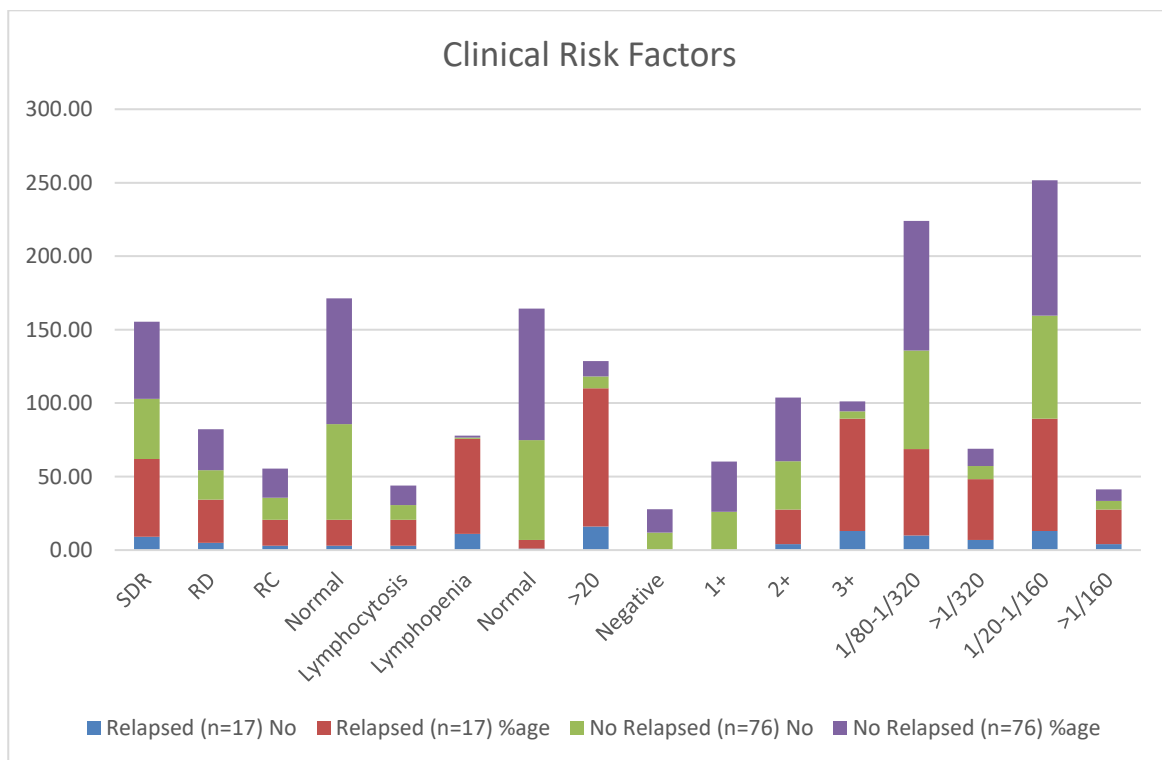


Table-II: Clinical Risk factors for brucellosis relapse in Lahore, 2015-2017

Risk Factors		Relapsed (n=17)		No Relapsed (n=76)		P value
		No	%age	No	%age	
Anti bact. Regimen:	SDR	9.00	52.90	41.00	52.50	0.5700 (NS)
	RD	5.00	29.40	20.00	27.80	
	RC	3.00	17.70	15.00	19.70	
Lymphocyte count:	Normal	3.00	17.70	65.00	85.50	0.0001 (S)
	Lymphocytosis	3.00	17.70	10.00	13.20	
	Lymphopenia	11.00	64.60	1.00	1.30	
ESR:	Normal	1.00	5.90	68.00	89.50	0.0001 (S)
	>20	16.00	94.10	8.00	10.50	
CRP:	Negative	0.00	0.00	12.00	15.80	0.0001 (S)
	1+	0.00	0.00	26.00	34.20	
	2+	4.00	23.50	33.00	43.40	
	3+	13.00	76.50	5.00	6.60	
Weight:	1/80-1/320	10.00	58.80	67.00	88.20	0.0150 (S)
	>1/320	7.00	41.20	9.00	11.80	
2ME:	1/20-1/160	13.00	76.50	70.00	92.10	0.1500 (NS)
	>1/160	4.00	23.50	6.00	7.90	



**DISCUSSION:**

In this research work, most of the relapsed patients were available with lymphopenia, large period between emergence of sign & start of treatment, high amounts of ESR & CRP showing infections, inflammation & enhanced anti-brucellae titers antibodies showing the CII (chronic intracellular infection). The less amount of the lymphocyte shows suppressed CMI. Organisms of Brucellae have the ability to live and even progress in quantity within mononuclear system's cells, elaborating the inclination of the relapse of the disease [4]. Interleukin-12 which is created by the lymphocytes has clear impact on stimulation of macrophages for the mitigation of brucellae [4, 15]. We conclude that lymphopenia as an identifier in patients can be a risk feature of relapse. We did not find same research works in the review of literature but works about the immunity in brucellosis displayed that CMI plays vital role in the defence against brucellosis [13, 15]. Haghirizadeh concluded that chronic & relapsed brucellosis has relationship with mitigated amounts in interleukin12 [15]. Dizer concluded that levamisole with anti-brucellae medicines put a positive impact on avoidance of relapses [12]. In this case work, the occurrence of the relapses was very common in men. This result is too much similar with the work of Moreta [11]. Aging also has a relation with the increase risk of the relapses. Most of the relapsed patients found with more than 2 months late in treatment. This outcome is much different from the findings of Moreta [11].

**CONCLUSION:**

Gender, aging, infection & lymphopenia are the dangerous aspects for relapse due to the bacterial disease of the brucellosis.

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