Immunology of Protus Persistant Pyuria Patientes

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ABSTRACT

The Species that are involed in human persistant pyuria were *Protus mirabilis* & *Protus vulgaris* the course of the Disease was of chronic persistant type and the patients showed
total serum protein , total serum globulin , mucosal globulin, serum IgG, IgM and IgA higher than those of normal subjects in immunoreactive patients , while these were slightly higher than those of normal subjects in immunocompromized patients . *Proteus* whole cell heat antigens detected clinically significant circulating and mucosal . *Protus* specific agglutinins to titres of 400 and 40; 360 , 36 respectively Leucocyte inhibition indicies were 96.2 , 95.8 as that of normal human subjects .Thus , the Proteal immunodominant epitope may be of T independent Type 1 nature.

مناعة المتقلبات المشتركة مع مرضى البيلة القيحية المستديمة

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وجد بان المتقلبات المشتركة مع البيلة القيحية المستديمة هى من نوعين *Pr. vulgaris Pr.mirabilis* .وكانت طبيعة هذة البيلة مزمنة و مستديمة .ازدادت مستويات كل من البروتين المصلى الكلى و الكلوبيولين المصلى والمخاطى و تراكيز اصناف الكلوبيوتينات المناعية IgG , Ig M ,IgA فى المرضى عما هو علية فى الاسوياء وكانت فى مرضى الخفض المناعى مرتفعة قليلا عن تلك التي فى الاسوياء

كانت عيارات الضد التلازنى المتخصص لمعدلات 40 , 400و 360, 36 لكل من النوعين على التوالى فى كل من المصل و الكتوبيولين المخاطى

واظهرت معاملات تثبيط هجرة الخلايا البيض بين 96.2 و 95.8 اى تثبيط غير معنوى مشابة كما يحدث فى حالة الاسوياء. وتفسر هذة النتائج على اساس ان الذرى المستضدية السائدة مناعيا من نوع غير المعتمدة على الخلايا التائية 1

Introduction

The *Protus mirabilis* and *Protus vulgaris* are known as opportunistic human pathogens (Brooks et al .1998).Several studies have been carried out elsewhere in the world . (Kamazawaia and Mutsumoto, 1997)
and in this area (Shnawa, 1996 .;AL-Nasiri,2000) have been emphasizing their roles as uropathogens.

Mahdi, 2000,found these *protus* species inducing muco-humoral immune responses . The present work was an attempt to investigate the humoral as wall as cellular immune responses both in immunoreactive and immunocompromized patients with persistants pyuria .

Materials And Methods

Nintgeen patients with persistant pyuria were immunorreactive and three patients were immunosuppres.From each each of which , a clean catch midstream urine,blood with and without anticoagulent were collected (Oconnell, 1982.;Mishill and Shiigi , 1982). Standarized methods a applied in bacteriology &immunology of these cases wer mentioned briefly in table-1.Ten Normal subject urine and Blood Samples were investigated as in test group.

Results

I- Bacteriology:

Urine cultures of these cases yields *Protus mirabilis* and *Protus vulgaris* (Table 2).

II- Immunology :

II- 1: *Protus mirabilis*

The female / Male ratio was 3/9 .The patient age range wase 21-70 years.The medians of total serum protein was 75.94,total serum globulins 42.28 g/L and the serum albumin to serum globulin ratio was 0.76

The serum immunoglobulin class concentrations were 15.89, 2.60 and 3.14 in patient in comparison to 11.47 , 1.95 and 2.44 g/ L in controls for the classes IgG , IgM and IgA , respectively .

The specific anti *Protus mirabilis* agglutinin in serum and mucosa were 360 and 36 in immuno-reactive and 200 as well as 40 in immuno-compromy patients respectively.

The ratio of systemic to mucosal agglutinin titres were 10/ 1 and 5/ 1 respectively . The correlation between concentration of immunoglobulin and titres of specific agglutinins were of simple linear type (Fig .1) as ;

Serum $Y = -823.899 + 27.126\ x$

$r = 0.615$

$Fc = 6.1134$ at $p = 0.0329$

$F\ r = 4.96$ at $P = 0.01$

Mucosa Y = -2.5141+53.684 x

r = 0.68

Fc=8.952 at P= 0.0329

F r=4.96 at P= 0.01

The peripheral blood leucocyte migration inhibition index and mucosal leucocyte migration inhibition index were as that of normal subject.

II-2 :*Protus vulgaris*

The female/ Male ratio was four to six . The range of the age of the patients were mostly 20- 50 years .

The median of total serum proteins was 73.21 g/ L .The total serum globulin concentration median was 42.28 g/L The median of mucosal globuline concentration was 0.62 g/L **.** The albumin / globulin ratio was 0.73 .The median of the different immunoglobulin class concentration were 12.71 , 2.04 and 2.96 for patients as well as 11.47 , 1.95 and 2.44. for normal subjects .These values were for IgG IgM and IgA respectively.

The specific agglutinin in serum and mucosa for immunoreactive were 400 and 40 while for immunocompromy patients they were 200 and 40 . The ratio for systemic to mucosal titres were 10/ 1 and 5/ 1 respectively .

The correlation between concentrations of immunoglobulin during the infection and titres were of simple linear type (Fig- 2); as in the followings ;

Serum Y=-2035.16 + 57.7019 x
r= 0.7582
Fc=10.8797 at P 0.01103
Ft= 5.32 at P 0.01

Mucosal Y=-20.97213 + 88.01956 x
r = 0.6739
F c=6.6755 at P 0.03
F t=6.1755 at P 0.01

The migration inhibition index of peripheral and mucosal leucocytes were showing indicics as that of normal subject values .

Discussions

Proteus mirabilis and *Proteus vulgaris* (tables 2-3 and 4 Fig 1&2) are being uropathogens (AL-Nassri 2002, Shnawa 1996). Being a uropathogen Protus
Species have several virulence associated antigens like Cellular invassiveness, direct haemaggluttinins,Immunogl--obulin sipletting enzyme for IgG and IgA . outermembrane proteins and serum resistance(Maclaren 1969, Silverblatt 1974 Zunino et al 1999).
The infection may be of aseanding typ(Sliverblatt 1914)
The urinary tract responses to entery of *proteus* is complex and involve multiple aspects of immune systems such as cytokines, immunoglobulins and cellular such as PMNS & T cells and B cells (Uehling et al 1999).

It seemed to be that the immunodominant immunoprotect--ive epitope is hexameric peptide within the haemolysin molecule(Heimer and Mobley , 1998).
As gram negative the LPS epitope functions as T indepen--dent type one epitope acting as dirct B lymphocyte mit-ogen which in turne terminated by antibody secretion (Zu--bler,1998). Non significant LIF results indicated that Tcell dependent cell mediated immune reactions are not involve in uropathic *Proteu* infections (Zublers, 1998).

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Table(1):The nature of the assays (A),shortcut a ccount (B) as well as the based reference (C)

No	A	B	
٩	Bacterology urine culture Biochemical properties	Direct Quadrate culture Indirect Enrichment then Quadratic culture Conventional classical and Miniaturized Epi- 20	Haproch 1960 Shuker 1998 Macffadin 2000
	Antigen,Sensitizers Particulate antigen Cell free culture filtrate	Benzel conumium Chlorid Treated whol cell antigen Sensitizer	MacCoy &Kenndy 1960 Shnawa &Thwaini 2000
	Systemic Immune Responses Blood Serology Cellular Immunology Immunologlobulin	Collection for leucocytes Collection for Sera Agglutination LIF Classification Mancini leural	Mishill &Shiigi 1980 Garvey et al 1977 Garvey et al 1977 Soberg 1968 Mancini et al 1965
	Mucosal Immune Responses Mucosal Immunoglobulin Dialysis Protein Agglutinination Leucocytes	Separation with 6%-PEG- Mucosal antibody three days Dialysis Saline and D.W Protein Estimation by Biurt Slide and Tube with and Without 2ME treatment Leucocyte Inhibit by Capillary Mathod	Burdon 1970&. Mahdi 2000 Boyer 1986 Bishop 1986 Crucishank et al 1975 Soberg 1968

Table 2 : characterization of uropathic Protus Isolates

Characters	Protus mirabilis		Protus vulgaris	
	Convential	Epi 20	Convential	Epi 20
Gram Reaction	-	-	-	-
Shape	Rods		Rods	Rods
Indol	-	-	-	-
Motility	M	M	M	M
Catalase	+	+	+	+
Oxidase	-	-	-	-
MR	-	-	-	-
VP	+	+	+	+
Citrate	+	+	+	+
Glucose	+	+	+	+
Lactose	-	-	-	-
Sucrose	+	+	+	+
Phenylulanin deaminase	FA	FA	FA	FA

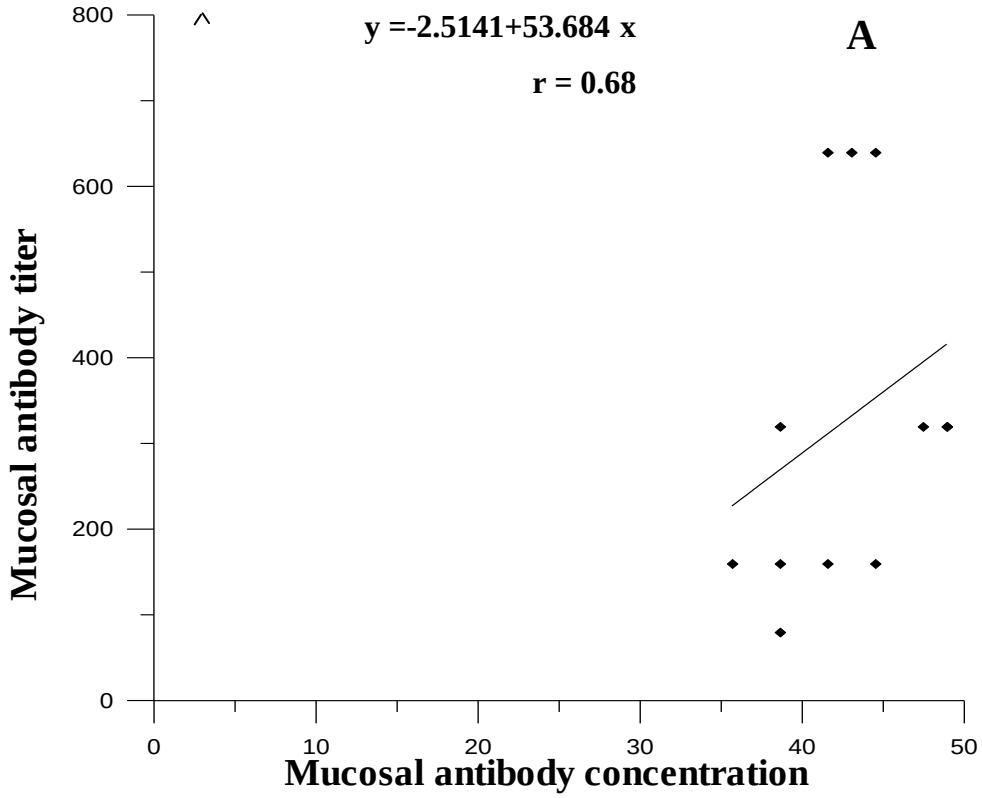
FA= Facultative Anaerobic .

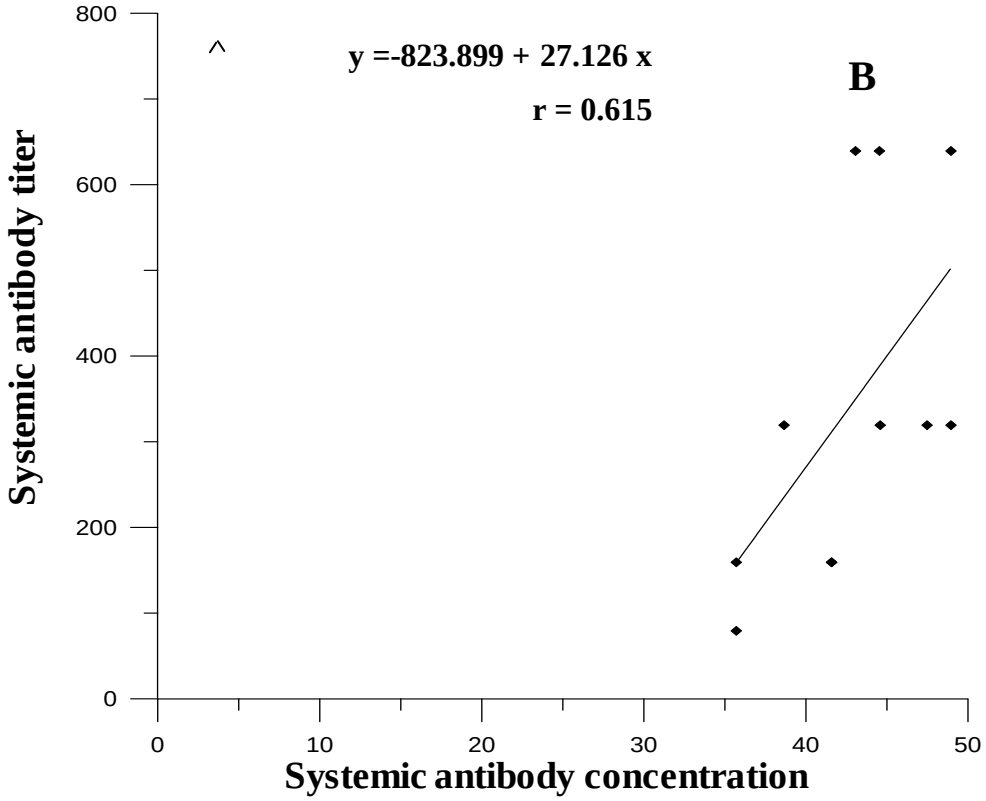
Table 3:Imunology of Protus Human Persistant Pyuria / I Immuno reactive

Characters	Pr.mirabilis	Pr.vulgaris	Control
F / M ratio	3/ 9	4/6	3/7
Age Range			
11-20	-	1	-
21-29	1	-	2
30-39	6	6	3
40-49	2	2	3
50-59	2	1	2
60-70	1	-	-
Median of ;			
Total Serum Protein	75.94	73.21	70.27
Serum Globulin	42.28	42.28	34.42
Mucosal Globulin	0.67	0.62	0.2
S G / M G	63.10	68.19	174.6
S AIb/ S G	0.76	0.73	1.01
Median of ;			
IgG g/L	15.89	12.71	11.47
IgM g/L	2.60	2.04	1.95
IgA g/L	3.14	2.96	2.44
Median of Specific Antibody titres			
In serum	360	400	-
In mucosa	36	40	-
S T / M T	10 / 1	10/ 1	-
Median of LIF Systemic	0.94	0.96	0.98
Median of LIF Mucosal	0.95	0.94	0.97

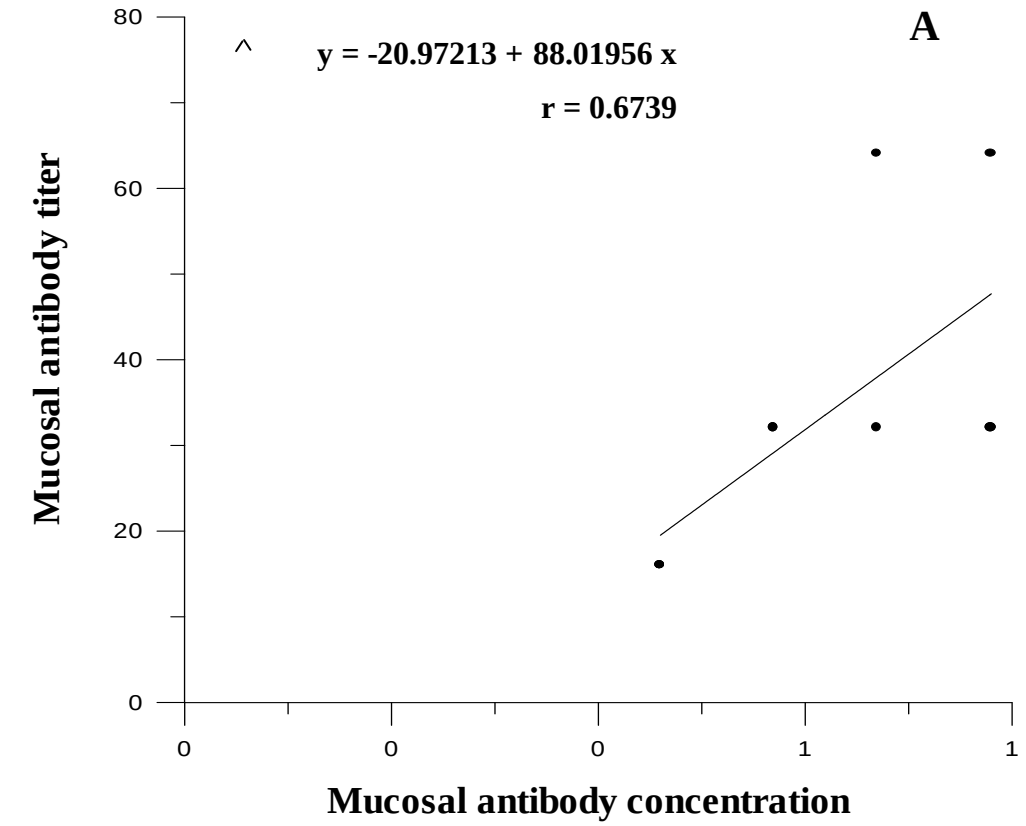
Table 4 : Immunology of Proteus Human Persistant Pyuri/ Immunocompromized

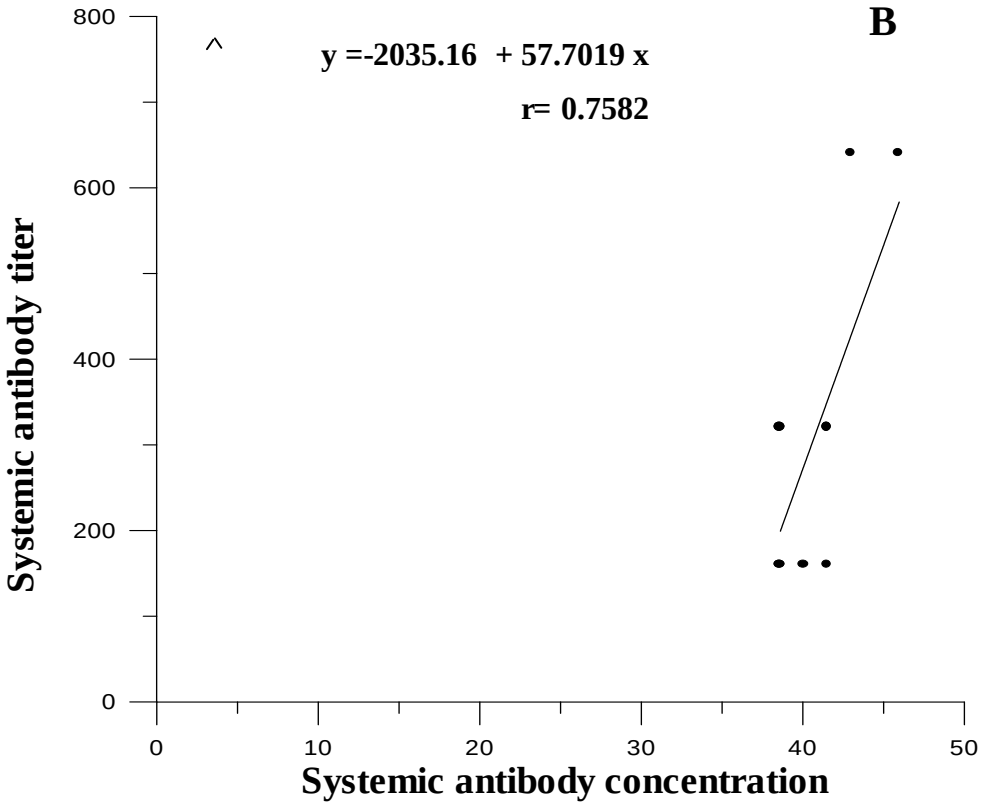
Character	*Pr. mirabilis* (2) *Pr. vulgaris* (1)	Control
Median of		
Total Serum Protein g/L	72.42	70.27
Total Serum globulin g/L	38.28	34.92
Mucosal globulin g/L	0.57	0.2
Serum globulin/M G g/L	170.2	174.1
AIb / Glob ratio :	0.917	1.01
Median of Serum		
IgG g/L	11.05	11.47
IgM g / L	1.25	1.95
IgA g / L	2.59	2.44
Median Specific Antiboby Titres		
Serum	200	-
Mucosa	40	-
S T / M T	5/ 1	-





Fig(1) : <u>Pr</u>. <u>Mariblis</u>
Regression analysis to Immunoglobuim* concentration *and specific Antiboby titers. Systemic (B) and mucosal (A)





Fig(2) : P. vulgaris regression analysis to Immunoglobulin constrain and specisic Antibody titers . Systemic (B) and mucosal (A)