



β 2M

**

*

*قسم التقنيات الاحيائية ، كلية العلوم ، جامعة بغداد ، بغداد – العراق.
 **قسم علوم الحياة- كلية العلوم- جامعة بغداد ، بغداد – العراق.

β 2M	β 2M	β 2M	β 2M
20	64	25	6
		β 2M	(P<0.01)
/ 2.77± 6.40	/ 11.91± 24.03	: β 2M)
β 2M	(/ 1.55± 0.73 / 2.08 ±7.12		
(%96 %96 %96)	(%100 %85 %100)		
	()		

STUDY OF β ₂M LEVEL IN PATIENTS WITH CHRONIC RENAL FAILURE

Jenan Mohammed Jawad Al-Safar*, Yassin Salman Al-Falahi**

* Department of Biotechnology , College of Science-University of Baghdad, Baghdad - Iraq.

**Department of Biology ,College of Science-University of Baghdad, Baghdad - Iraq.

Abstract

This study was carried out to demonstrate the importance of measurement of serum and urine β 2M levels to confirm the clinical diagnosis of some common diseases in Iraq and Also, this work was mainly designed to study the levels in serum of patients with chronic renal failure (CRF), which they were in the end stage of renal disease (ESDR) depending on hemodialysis (HD). This study included 64 patients with CRF (ESDR/HD) comparing various serum parameters with those of 20 patients with viral infection, 6 patients with acute leukemia and 25 normal controls.

A statistical difference (P<0.01) in serum levels of serum β 2M was noticed between CRF patients, viral infected patients, acute leukemic patients and health controls. Mean of serum β 2M levels showed of values of 24.03, 11.91 , 6.40 , 2.77 , 7.12 , 2.08 and 1.55 mg/l respectively. Serum β 2M test showed a sensitivity (100% , 85% and 100%) and specificity (96%, 96% and 96%) in patients with CRF , viral disease and acute leukemia respectively. These findings reflect the importance of β 2M as differential diagnostic, prognostic parameter and tumor marker.

[4] β 2M (Amyloid) HLA-class I (11800 100)

β 2M β 2M 24 / 150 Turnover

[5] β 2M 2.4-) β 2M (/ 1.1
 .[1] (/ 0.16-0)
 β 2M (Kidney) β 2M
 (Glomeruli) (Catabolism) (Reabsorption)
 β 2M (Proximal tubular cells)
 المواد و طرائق العمل [2] β 2M

: β 2M (CRF) (VD) (AL) (H) .[3] β 2M

CRF β 2M 64 (Radial immunodiffusion) / ()
 ESRF (Electroimmuno-diffusion)
 HD / (Immunophelometry)
 20 / (Radioimmunoassay) (RIA)
 6 (Enzyme linked fluorescent β 2M immunoassay) (ELFA)
 25 (ELIZA) (RIA) (ELFA)
 1995

(Single radial

immunodiffusion)(SRID)

IgA , IgM , IgG

[7]

.Sanofi

: (Screening test)

:Specific tests

.3

.1

.Detection of HBs Ag

Direct

non-competitive sandwich test

.HBs Ag

.2

. [9, 8] Radox

β 2M

.Detection of Anti-hepatitis C virus

BioMerieux

β 2M

β 2M

)

HCV

(Solid phase antigen

Diasorin

) β 2M

l125

(

HIV

.1

(Recombinant DNA)

25

90

:General tests

.2

130

233

(1)

103

Na-acetate

(2)

115

(Scanner)

%7.8

. [6]

%7.8

()

:1

	±						
P<0.01 NS	12.02	34.15	10-63	15	49	64	/
P<0.01 NS	9.24	28.95	17-51	0	20	20	/
P<0.01 NS	16.02	43.17	18-62	0	6	6	/
P<0.01 NS	17.60	33.96	10-85	13	12	25	/
				28	87	115	

(P<0.01 P<0.05 P>0.05)

:2

HCV		HBV		HIV			
59	5	59	5	64	0	64	/
12	8	11	9	17	3	20	/
6	0	6	0	6	0	6	/
25	0	25	0	25	0	25	/
102	13	101	14	112	3	115	

(2)

) (-) ()

(

β_2M

β_2M

()

(HIV)

.[10]

S	P	T	±			±			
	0.003	3.016	0.45	7.62	6.4-8.1	1.62	6.26	2.4-9.7) (100/
	0.0006	3.572	0.59	4.41	3.5-5.6	1.17	3.538	0.94-6.15) (100/
	0.140	1.989	0.663	2.595	1.18-3.30	0.999	2.917	0.88-7.07) (100/
	0.034	2.159	0.44	1.63	1.06-2.58	0.47	1.37	0.2-2.31	/
	0.76	0.305	0.09	0.274	0.1-0.48	0.23	0.259	0.09-1.2	1- (100/)
	0.209	1.269	0.195	0.59	0.1-0.8	0.36	0.686	0.03-1.68	2 - (100/)
	0.0003	3.789	0.152	0.572	0.1-0.5	0.18	0.729	0.06-0.92) (100/
	0.501	0.676	0.34	1.174	0.5-1.7	0.54	1.253	0.21-2.36) - (100/
	0.006	2.828	82.9	981.0	820-1160	309.8	1159.2	370-2200) IgG (100/
	0.124	1.554	10.05	92.5	75-115	17.38	86.8	47-140) IgM (100/
	0.07	1.834	33.52	200.1	118-249	68.31	173.8	19-295) IgA (100/

T: t – test P: Probability S: Significant

33

(3)

β_2M

/

20

IgG

[11]

(3)

β_2M

β_2M

) (/ 2.77±6.40)

(/ 0.73±1.55

/ 2.5

β_2M

[12]

(/ 502-51.8)

التحليل الإحصائي			مجاميع البحث				الاختبار
S	P	F	الأصحاء	ابيضاض الدم الحاد	الأمراض الفيروسية	القصور الكلوي	
معنوي	0.00	129.4	17-33 (23.8) ± 4.82	15-35 (28.30) ± 7.20	14-33 (23.6) ± 6.26	100-430 (246.3) ± 79.54	تركيز اليوريا (ملغرام / 100مليتر في مصل الدم)
معنوي جداً	0.00	104.5	0.5-1.1 (0.73) ± 0.15	0.7-1.4 (0.97) ± 0.28	0.4-1 (0.70) ± 0.18	2.2-16.5 (9.37) ± 3.45	تركيز الكرياتينين (ملغرام / 100مليتر في مصل الدم)
غير معنوي	0.00	47.01	0.72-3.81 (1.55) ± 0.73	4.8-10.32 (7.12) ± 2.08	2.11-10.23 (6.40) ± 2.70	5.2-51.8 (24.03) ± 11.91	تركيز الكلوبولين الدقيق الثاني (ملغرام / لتر في مصل الدم)
معنوي	0.00	10.42	0.0-0.7 (0.10) ± 0.18	0.0-0.12 (0.06) ± 0.04	0.0-0.12 (0.05) ± 0.03	0.07-11.8 (1.52) ± 1.82	تركيز الكلوبولين الدقيق بيتا الثاني (ملغرام / لتر في الادرار)

T: t – test

P: Probability

S: Significant

- Virella, G. and Arrigo, S. **1996**. *HIV and AIDS ,in microbiology and infectious disease*, Virella, G.(ed.) Williams and Wilkins a waverly company. The national medical series for independent study.
- Lee,C.;Levin, A. and Branton ,D. Serum protein profile by electrophoresis. *Anal Biochem* .**1987** .**166**:308.
- Mancini, G.; Garbonara, A. D. and Heremans, J. F. **1965**. Immunochemical quantitation of antigens by single radial immunodiffusion. *Immuno. Chemis.* **2**: 235 - 254.
- Patton,C.J and Cronch, S.R. **1977**. Urea determination *Anal.Chem.* **49**,454-469.
- Henry,R.J.; Cannon, D.C. and Winkelman, **1974**. In clinical chemistry, *Principle and techniques*. Endi. Harper and Raw. 2nd ed.
- Lake-Bakaar,G.M.D.; Ruffini, L. and Kuzmic , P. **2000**. Dynamic of HLA- beta - 2 – microglobulin subunit during treatment with high dose interferon with or without Wibavirin : Correlation with serum HCV RNA and ALT. *Digestive disease week* , **11**:22-24.
- Whicher, J. T.**1994**. New international reference preparation for proteins in human serums (RPPHS) .*Clinical chemistry* .**40**(6):934-938.
- Shuster, J.; Gold, P. and Poulik, M.D.**1976**. β 2- microglobulin levels in cancerous and other disease states .*Clin. Chim. Acta.*,**67**:307-313.
- Ljunggren, H.G. **1992**. Role of beta-2-microglobulinin cancer. *The cancer journal*.**5**(6):1-15.

$$\beta_2M \quad (4)$$

$$(2.08 \pm 7.12)$$

$$(0.73 \pm 1.55)$$

.[13]

(4)

 β_2M

()

References

- Silverman, L. M. and Christenson, R. H. **1994**. Aminoacids and proteins. *In : Textbook of clinical chemistry*.(2nded.) Burtis C. A. and Ashwood ,E.R.(eds). Philadelphia,W.B. Sanndeve CO.:713.
- Davidson, S. **2002**. *Principles and practice of medicine* .19th ed.:578-579.
- Wu,J.T. **1996**.Diagnosis and management of cancer using serologic tumor marker .In : *Clinical diagnosis and management by laboratory* (Henry,J.B. ed.) W.B. Saunders company.19th ed.
- DiaSorin, S. A. **1998**. Procedure for quantitative determination of β_2M in human serum plasma or urine samples. β_2 microglobulin. Radioimmunoassay kit.PP.1-6

