Determination of some biochmecal markerd in patients with breast cancer

Luma abd almunim baker
Department of Chemistry , College of Education , University of mosul , Mosul , Iraq

Abstract

Breast cancer is a big problem in Western females in which the most useful serum markers of this diseases in its early stage are CA15-3and CEA.CA125play a big role with other physical examination in the detection of ovarian cancer ,but its role with breast cancer has been studded with this research beside the effect of C-reactive protein (CRP) as the aim of this study46 consecutive women suffering from breast cancer and aged from 35-45 years has been included in this study.CA125 were investigated by minividas. C.R.P. was measured also using a fresh sera by C.R.P. latex test C.A125 and C.R.P. levels were measured every three months interval to follow up the patient before each course of chemotherapy the results showed the mean ± SD for CA125 before chemotherapy was 65.78 ± 15.68 which was shown significant differences with the first (54.76 ± 12.44) , second (50.15 ± 11.62) and third month (40.02 ± 10.13) of chemotherapy with P<0.000 . C-Reactive protein was measured also for all patients for the same period of time . There is a significant differences in the concentration of C.R.P. between group 1(96&48 mg/dl) and group 2 (<6,12,24 mg/dl) in the 1st month p<0.0001 -p<0.0002 in the 2nd month and p<0.0001 in the 3rd month The results of these calculations the future it may be useful if we research about a relation between these two parameters (CA125 & CRP) in the case of metastasis of breast cancer .

Introduction

breast cancer is a big problem in Western females [1,2,3,4,5] serum and tissue based marker is dependent in the diagnosis and prognosis of patients with breast cancer ;in which the most useful serum markers of this diseas in its early stage are ca15-3 and carcinoma embryonic antigen {CEA} [6,7],other doctors may also estimate elevated in both disases and begain condition such as CA27-29 [8,9].

Ca125 a main like glycoprotein was first identified by the monoclonal antibody OC125 in 1981[10]. CA125 play a big role with other physical examination in the detection of ovarian cancer [11],but its role with breast cancer has been studied with this research beside the effect of C-reactive protein (CRP) as the aim of this study . Ca125 is a protein found in the blood and it is known as tumor or cancer marker as increased level may indicate that ovarian cancer was present [12,13,14,15].However, there are many other causes for razed CA125 level such as ovulation, menstruation, endometeriosis, fibroids and benign ovarian cysts; illness such as liver or kidney diseases and malignant condition such as breast cancer[16,17].

CRP is an acute phase reactant synthesized by the liver and is regulated by proinflamatory cytokine 6[18,19,20,21] ; Although its function is unclear and it may play a good role beside CA125 in the diagnosis and prognosis of patients with breast cancer.

Patients and Method

Information was taken from all patients by the pre-tested questionnaire on family history to this disease, drug condition specially for control group and Physical examination by mamograph were also included in this study.

Statistical analysis were analyzed using paired t-test and all value were quoted as the mean ±SD .differences objectives were considered significant at $p<0.05$[22]. sixty – four consecutive women suffering from breast cancer and aged from 35-45 years has been included in this study.

CA125 were investigated for all patients before under went chemotherapy (Normal Rang<30 U/ml), which was measured by minividas by measuring C125 antigen in the serum by ELFA technique using a kit purchased from biomereux Ltd,France [23].

C.R.P. was measured also using a fresh sera by C.R.P. latex test [24] using a kit purchased from biomereux Ltd, France .

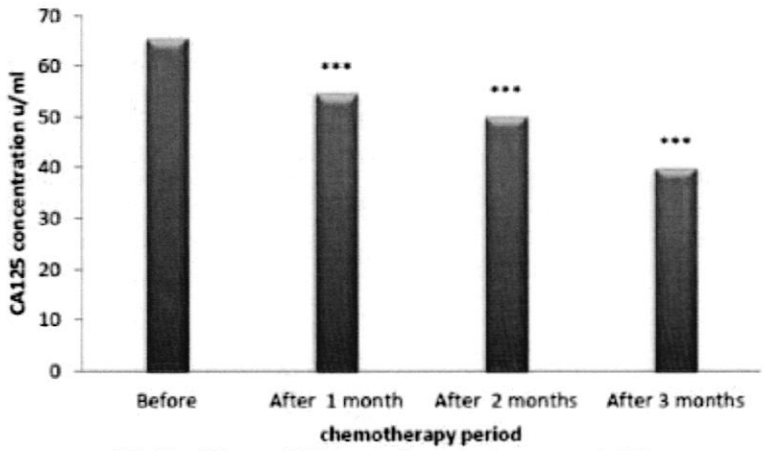
CA125 and C.R.P. levels were measured every three months interval to follow up the patient before each course of chemotherapy . Serum sample was taken in the morning in 5ml syringe, C.R.P. was measured immediately while CA125 was measured in sera stored at -20℃. All this investigations had been down by the aid of oncology and nuclear medicine hospital and Ibn sina teaching hospital in which the patients achieving a complete clinical, physical and radio graphical examination during the study period of April 2007 through January 2010. The control group was included also in this study getting a forty-one women free from breast cancer. CA125 and CRP has measured for all these women; in which CA125 was < 30U/ml in 26 women (63.4%), while the remainder having value ≥ 30 U/ml (36.6%) .

Results

Serum CA125 and CRP was analyzed for forty-six consecutive women suffered from breast cancer before chemotherapy and follow up period of three months. The mean ± SD for CA125 before chemotherapy was 65.78 ± 15.68 U/ml which was shown significant differences with the first (54.76 ± 12.44) U/ml , second (50.15 ± 11.62) U/ml and third month (40.02 ± 10.13) U/ml of chemotherapy with P<0.000 as it shown in table-1 & figure-1 .

Table-1 Concentration of CA125 in patients before and the during period of therapy

Therapy period Month	Mean ± SD		.P-value
	Before Therapy	After Therapy	
1	65.78±15.68	54.76±12.44	<0.000
2	65.78±15.68	50.15±11.62	<0.000
3	65.78±15.68	40.02±10.13	<0.000



***** Significant difference from before at p<0.000**

Figure-1 concentration of CA125 in patients before and during period of therapy

C-Reactive protein was measured also for all patients for the same period of time. The patient was divided into two groups according to the concentration of CRP , in which patients having a concentration of 96 mg/dl involve in groupe one and groupe two included the concentration of < 6,12,24 mg/dl ;in which , before chemotherapy all patients included in groupe-1 (100%) with a concentration of 96 mg/dl (69.6%) and 48mg/dl (30.4%) .

In the first month of chemotherapy forty one patient included in groupe-1 with concentration of 96mg/dl (45.7%) and 48mg/dl (43.5%) while the reminder were involved in grope-2 with concentration of 24mg/dl (8.7%)and 12mg/dl (2%) ; the differences of $P < 0.0001$.

In the second month of chemotherapy 19.6% of patients included in groupe-1 with a concentration of 48mg/dl, while in the second groupe 32.6% (24mg/dl), 39.1% (12mg/dl) and 8.7% (<6 mg/dl) P<0.0002 .

In the third month of chemotherapy the concentration was 0.0% in groupe-1 while in groupe-2 it was 43.5% (12mg/dl) and the reminder patient 56.5% with a concentration of (<6mg/dl) P<0.0001. see table-2 & figure-2 .

Table-2 Distribution of CRP concentration in patients during therapy

CRP mg/dl Concentration	Before		1-month		2-month		3-month	
	No.	%	No.	%	No.	%	No.	%
<6	0	0	0	0	4	8.7	26	56.5
12	0	0	1	2.1	18	39.1	20	43.5
24	0	0	4	8.7	15	32.6	0	0
48	14	30.4	20	43.5	9	19.6	0	0
96	32	69.6	21	45.7	0	0	0	0

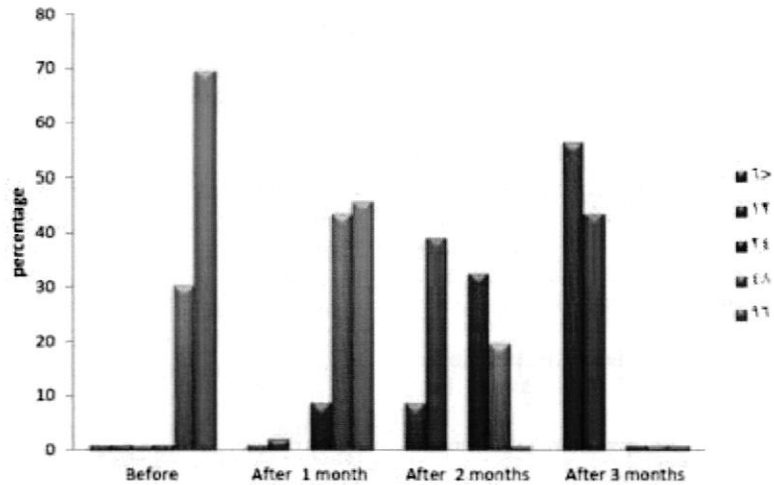


Figure-2 Distribution of CRP concentration in patients during therapy

CA125 value before chemotherapy was ≥ 30 U/ml for all patients and remain like this in the first and second month of ; chemotherapy while in the third month of chemotherapy 37 patients (80.5%) having a value of ≥ 30 U/ml and just 9 patients (19.5%) decreased in its value to <30U/ml as it shown in table-3 & figure-3.

Table-3 Distribution of CA125 in patients before and during therapy

CA125 u/ml Concentration	Before		1-month		2-month		3-month	
	No.	%	No.	No.	%	No.	%	No.
+VE	46	100	46	100	46	100	37	80.5
-VE	0	0	0	0	0	0	9	19.5

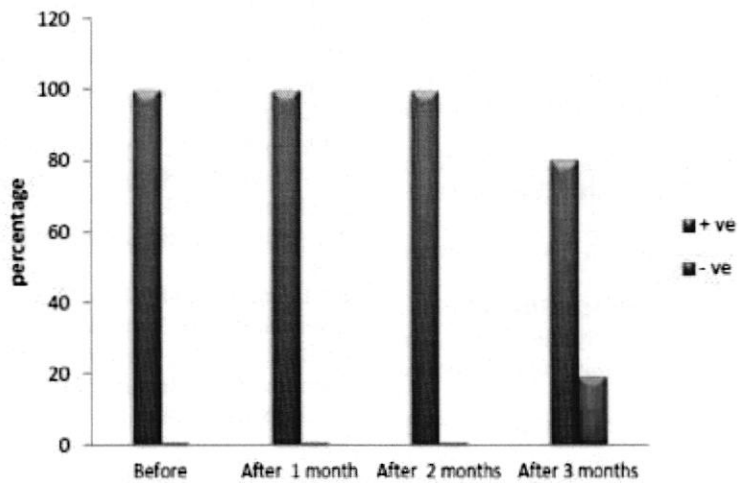


Figure-3 Distribution of CA125 in patients before and during therapy

In control grope 15 women 36.5% with CA125 value of ≥ 30 U/ml and 26 women 63.5% with CA125 value of < 30 U/ml .

Discussion

CA125 is a surface glycoprotein , which elevated commonly in the case of ovarian cancer [25,26] however; this marker have been reported in other benign condition such as pregnancy, indometeriosis, ovulatory cycle, liver diseases and tuberculosis [15,16,26] (as in control grope involved in this study); also in number of other malignant condition like breast cancer [16,27,28,29,30,31,32,33].

Ca125may play a good role for monitoring progression and regression in patients of breast cancer .In this study Ca125 show a significant differences through different periods (before ,first ,second and third month) of chemotherapy but its value still ≥ 30 U/ml, so it may be useful beside mammographic and other physical examination for monitoring patients with breast cancer during their follow up and this agree with R.Yerushalm *etal* . And Atalay C. respectively [30,31]; which were thought that CA125 is a marker for primary breast cancer.

C-Reactive protein play a big role beside CA125 in the follow up of breast cancer for patients involved in this study in which this acute phase protein deals with other type of cancer like colorectal cancer [34] .

In the future it may be useful if we research about a relation between these two parameters (CA125 & CRP) in the case of metastasis of breast cancer .

References

1. Molina R. , Barac V. ,Dalen A.V. , Duffy M.J. , Einarsson R., Gion M. *etal.* Tumer Biol 2005;26:281-293.

2. Tabler L., Fageberg C. J., Gad A., Baldetorp L. , Holmberg L.H., Grontaft O .*etal.* Lancet 1985; 8433:829-832.

3.De Koning H .,Boer R., Warmerdam P. ,Beemsterboer PM. and Van der Mass P.J. J Natl Cancer Inst 1995;87:1217-1223.

4. Persson I., Bergstrom R., Barlow l. and Adami H-O.British J of cancer 1998;77(1):167-169.

5.Kim B .K., Lee J .W .,Park P.J., Shin Y.S., Lee W.Y., Lee K.A. *etal.* Breast Cancer Research 2009; 11:R22.

6. Agha-Hosseini F., Mirzaii-Dizgah I. and Rahimi A. Med Oral Patol Oral Cir Bucal 2009;1;14(10):521-524.

7.Barros A.C., Fry W .J r., Nazario A.C., Santos M.O. and Sato M.K. Eur J Surg Oncol.1994;20:130-132.

8. Nicolini a. Carpi A. Ferrari P. and Rossi G. Cancer Lett 2008;263:122-9.

9.Frenette P. S., Thrilwell M. P., Trudeau M., Thomson D .M . , Joseph L. and Shuster J.S. Tumor Biol 1994;15:247-54.

10. Guppy A.E. and Rustin G.J.S. The Oncologist 2002;7(5):437-443.

11. Sturgeon C.M., Duffy C.G., stenman U.H.,Lilja H., Brunner N .,Chan D.W. *etal.* Clinical Chemistry 2008;54: 11-23.

12. Al-Saffar S.,Al-Hashimi H ., Al-Saad S .,Malik A .K . , Farid E. Bahrain Medical Bulletin 2002;24(1):29-31.

13. Tuxen M .K., Soletormos G., Dombernowsky P.Br J Cancer 2001;84:301-7.

14. Rustin G.J.S. J Clin Oncol 2003;21(10):187-193.

15. Liu B .,Nash J .,Rnuowicz C .,Swede H .,Stevens R .and Li Z .Journal of Hematology and Oncology 2010;3:7.

16. Scholler N. and Urban N. Biomark Med 2007;1(4):513-523.

17. Peter H. and Wiernik M .D .Clinical Adnes in Hematology and Oncology 2008;69(7):527-531.

18. Asis N., Fahey J.L., Detels R. and Butch A .W .Clinical and Diagnostic Laboratory Immunology 2003;652-657.

19. Gabay C. and Kushiner I. The New England Journald of Medicine 1999;340(6)448-454.

20. Yasojima K .,Schwab C. ,McGeer E.G. and Mc Geer P.L. American Journal of Pathology 2001; 158 (3):1039-1051.

21. Vukovich T. C., Mustafa S., Rumpold H. and Wagner O.2003; 49(3):511-512.

22. Armitag P. 4th ed . Blackwell .Oxford, London ,UK:1974.

23. Mani R.,Jamil K. and Vamsy M .C.Trendes inMedical Research 2007;2(3):128-134.

24. Teller w .s., Francis T.J.,J. Exp. Med .1930;50:561.

25. Rosen D .G .,Wang L. ,Atkinson J. ,N. ,Yu y. ,Lu K. ,H. ,Diamandis E. ,P. *etal* .Gynicol Oncol 2005;99:267-277.

26. Gubbels J. AA, Claussen N., Kapur A. K. a Connor j. p. and Patanckar m. s. Journal of Ovarian Research 2010;3:8.

27. Berruti A., Tampellini M., Torta M., Buniva T. ,Gorzigno G. and Dogliotti L.Eur J Cancer 1994;30A(14);2082-4.

28. Norum l. F., Erkstein B. and Nustad K.Tumour Biol 2001;22(4);223-8.

29. Baskic D., Ristic P., Matic S., Bankovic D., Popovic S. and Arsenijsa N.Biomarkers 2007; 12 (6) 657-667.

30. Yerushalmi R., Tyldesley s., Kennecke H., Speers C., Woods R., Knight B.*etal.* Annals of Oncology 2011;doi:10.1093.

31. Atalay C. Erciyes Medical Jornal 2008;30(4):218-224.

32. Leonard G.D., Low J.A., Berman A.W. and Swain S.M. The Breast Journal 2004;10 (2):146-149.

33. Bast R.C.JR., Ravdin P., Hayes D.F., Bates S., Fritsche H.JR., Jessup J.M. *etal.* J Clin Oncol 2001 ;15;19(6):1865-78.

34. Gur T., Demir H. and Kotan M.C .Asian Pacific J Cancer Prev 2011;12:3147-3150.

قياس بعض المؤشرات الكيموحيوية للمرضى المصابين بسرطان الثدي

لمى عبد المنعم بكر

قسم الكيمياء ، كلية التربية ، جامعة الموصل ، الموصل ، العراق

الملخص

سرطان الثدي من الأمراض الشائعة لنساء منطقة الشرق الأوسط. من الدلائل السرطانية المستخدمة لكشف المرض في مراحله الأولى هي CA125 و CEA . الدليل السرطاني CA125 يلعب دور مهم في الكشف عن سرطان المبايض ولكن دوره في سرطان الثدي درس إلى جانب C.R.P. كهدف لهذه الدراسة .

تضمنت الدراسة **46** مريضة بسرطان الثدي وبأعمار تراوحت بين 35-45سنة وقد تم قياس CA125 بجهاز أل Minividas بالإضافة ل C.R.P. بطريقة أل latex test قد تم قياس هذين المتغيرين قبل العلاج الكيماوي بالإضافة لمتابعة الحالة لمدة ثلاثة أشهر لنفس المريضات حيث أظهرت النتائج الوسط الحسابي ±الانحراف المعياري لCA125 قبل المعالجة الكيميائية كان 65,78 ±15,68 والذي يشير إلى اختلاف معنوي للشهر الأول في المتابعة 45,76± 12,44 ، الشهر الثاني50,15± 11,62 وللشهر الثالث كان 40,02 ± 10,13 . أما بالنسبة ل C.R.P. فقد أعطى اختلاف معنوي بتركيزه بين المجموعة الأولى (96-48 ملغم /100 مل)والثانية (6>،12,24 ملغم /100 مل) للشهر الأول P<0.0001 ، الثاني P<0.0002 والثالثP<0.0001 . وأخيرا يمكن الاستنتاج ان يكون من المفيد في المستقبل دراسة العلاقة بين المتغيرين CA125 و C.R.P. في الحالات المتقدمة لسرطان المبايض.