

**SUDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
COLLEGE OF GRADUATE STUDIES**

**A STUDY OF BREAST CANCER IN SUDANESE
FEMALES WITH SPECIAL REFERENCE TO
PROLACTIN HORMONE**

BY

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Dedicated
To my
Dear family

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ABSTRACT

A study group of 33 Sudanese patients with breast cancer females attending at the Radioisotopes Khartoum Center (RICK) during the period of January-September 2005 were enrolled in the study. The patients had an age range of 32-88year with an average value of 56 ± 2.7 year. All patients had been diagnosed with invasive ductal carcinoma (IDC) except one that had invasive lobular carcinoma (ILC). A sample of 20 healthy subjects was enrolled as a control group (41.5 ± 1.6 year). Blood samples were taken from all patients, and control subjects to estimate CA15-3 and Prolactin hormone.

The study indicated that 70% of patients had breast pain or change of breast size/shape for three month or more. Only 28% of patients had a family history of breast cancer. CA15-3 was determined by RIA using two monoclonal antibodies and two different epitomes CA15-3 molecule as the level of Prolactin hormone had been estimated using ELISA. Accordingly the average value of CA15-3 in female patients (24.9 ± 6.3 U/mL) was significantly higher when compared with CA15-3 in control subjects (16.7 ± 1.2 U/mL), ($P<0.05$). Correlation analysis suggested that CA15-3 level had not been related with age of patients or healthy subjects but CA15-3 had significantly been reduced by surgical treatment of patients (14.60 ± 0.97 U/mL) unlike chemotherapy (60 ± 23.4 U/mL).

With reference to analysis of Prolactin, an average value of 375.9 ± 33.4 U/L had been determined in patients compared with a significantly reduced value of Prolactin (292.7 ± 39.6 U/L) in healthy control subjects. A significantly high level of Prolactin ($P<0.05$) was recorded in

patients treated by surgery unlike the group of patients treated by chemotherapy.

Correlation analysis of Prolactin level with variation in variables such as CA15-3 concentration, age, frequency of pregnancies and number of children failed to find any significant association. The study recommends the use of CA15-3 as a screening test for females at risk of breast cancer.

الخلاصة

أشترك في هذه الدراسة مجموعة من 33 امرأة مصابة بسرطان الثدي عند زيارتهن لمركز الخرطوم للعلاج بالأشعة (RICK) في الفترة من يناير إلى سبتمبر 2005م. وتراوحت أعمارهن بين 20-56 عاماً بينما كان متوسط أعمارهن 2.7 ± 56 عاماً. وقد شخّصت الحالات المريضة بأنها جميعاً مصابة بسرطان قنوات الثدي (IDC) ما عدا عينة واحدة فقط تم تشخيصها على أنها مصابة بالسرطان العقدي المصيب للغدد الليمفاوية (ILC). كما انخرط في الدراسة عينة من 20 امرأة معافاة ويتراوح أعمارهن بين 41.5-64.1 عاماً. وأخذت عينات الدم من كل النساء في المجموعتين لقياس تركيز انتجين السرطان CA15-3 وهرمون البرولاكتين.

وقد أشارت الدراسة إلى أن 70% من المريضات يعانين من آلام وتغير شكل أو حجم الثدي لثلاثة أشهر أو أكثر بينما تبين أن 28% فقط من المريضات لهن تاريخ مرضي في العائلة. كما تم قياس CA15-3 بواسطة RIA التي تستخدم الأجسام المضادة أحادية المنشأ واثنتين من الموسومات الراسية بينما استخدمت تقنية ELISA لتقدير مستويات هورمون البرولاكتين. وعليه فقد كان متوسط مستوى CA15-3 مرتفعاً عند المريضات $6.324 \text{U/m} \pm$ مقارنة بمجموعة الأصحاء من النساء ($1.2 \text{U/L} \pm 16.7$) ولذلك الارتفاع دلالة إحصائية ($P < 0.05$). وتشير الدراسة إلى أن معدل CA15-3 ليس له علاقة مع عمر المرضي الأصحاء ولكنه قد تناقص بصورة واضحة مع المريضات المعالجات بالجراحة ($14.0 \text{U/mL} \pm 0.97$) وذلك بالمقارنة مع المعالجات بالعلاج الكيميائي ($60 \pm 23.4 \text{U/mL}$).

كما أظهرت الدراسة أيضاً بالرجوع إلى تحليل البرولاكتين أن قراءتها تزيد بصورة واضحة $33.4 \pm 375 \text{U/mL}$ مقارنة بمستوى أقل للهورمون عند النساء الأصحاء ($39.6 \pm 292.7 \text{U/L}$) إلا أن الدراسة سجلت

مستويات اعلى لهرمون البرولاكتين عند المريضات اللاتي تمت معالجتهم بالجراحة بالمقارنة مع المعالجات كيميائياً. ولم تظهر أي علاقة بين مستوى هرمون البرولاكتين ومستوى CA15-3 او متغيرات أخرى كالعمر وتعدد مرات الحمل وعدد المواليد. وعليه توصى الدراسة بضرورة الفحص المبكر لسرطان الثدي واهمية استخدام المستضد الجيني فى متابعة نتائج العلاج، ولعل ذلك يستدعى تدريب الكفاءات الفنية لتنفيذ ذلك ضمن الخدمات التشخيصية للنساء المعرضات للأصابة.

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LIST OF ABBREVIATIONS

ANOVA	Analysis Of Variance
BCT	Breast Conservation Therapy
ELISA	Enzyme Linked Immunosorbent Assay
Gnrh	Gonadotrophin Releasing Hormone
Hprl	Human Prolactin Hormone
HRP	Horseradish Peroxidase
IDC	Invasive Ductal Carcinoma
ILC	Invasive Lobular Carcinoma

LH	Luetinizing Hormone
LSD	Least Significant Difference
MRI	Magnetic Resonance Imaging
RIA	Radioimmunoassay
RICK	Khartoum Radiotherapy Centre
WHO	World Health Organization