



SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Ospedaliero - Universitaria di Modena
Policlinico



Alimentazione e tumore mammario



Dott.ssa Laura Cortesi. Azienda Ospedaliero-Universitaria. Policlinico di Modena

Classificazione e Distribuzione Sottotipi BC

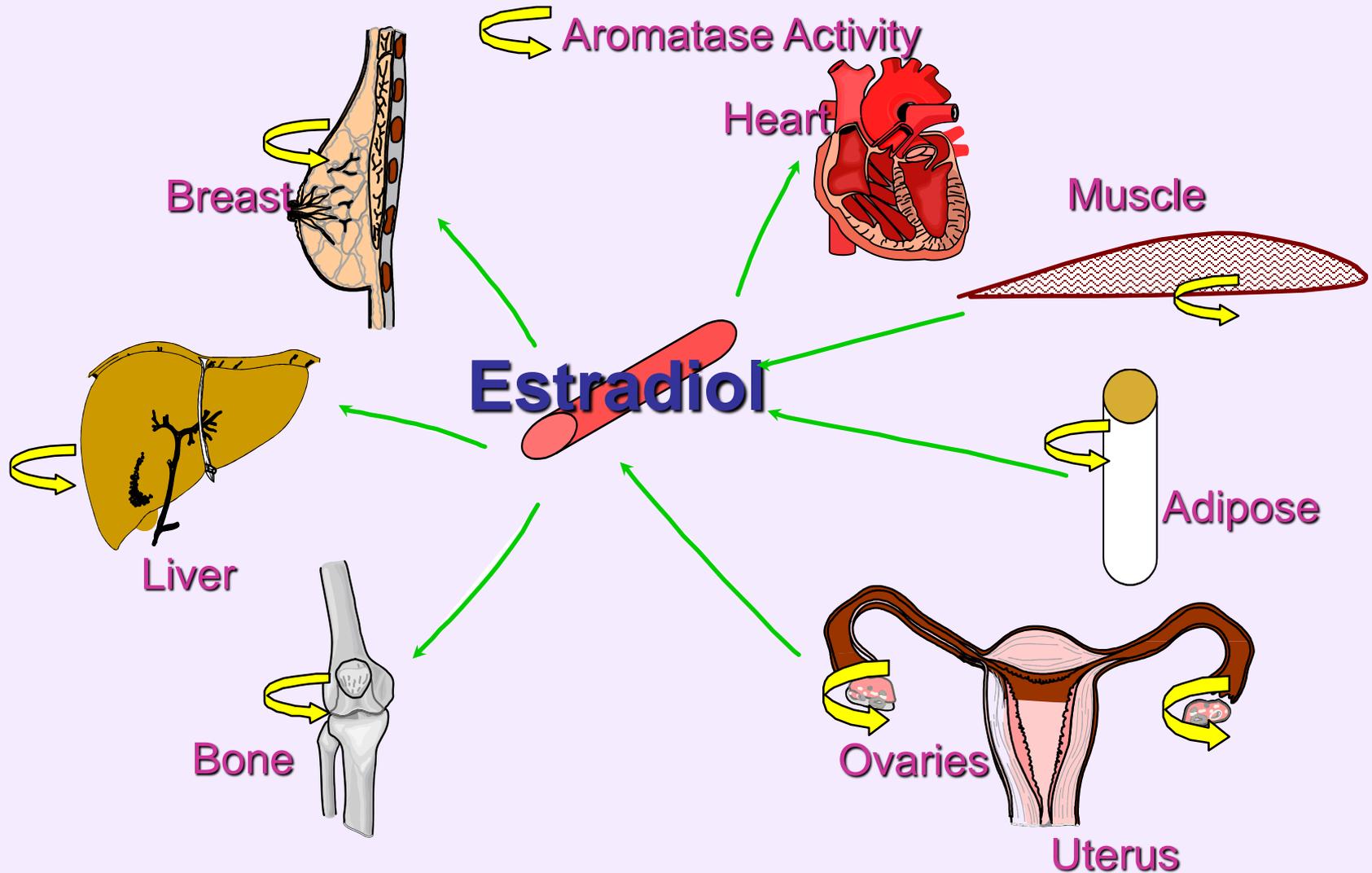
Breast cancer subtype	African-American premenopausal N ^a (%) ^b	African-American postmenopausal N (%)	White premenopausal N (%)	White postmenopausal N (%)
Luminal A N = 796	108 (41.4)	179 (56.3)	216 (57.4)	293 (66.5)
Basal-like N = 225	70 (27.2)	52 (16.0)	54 (14.5)	49 (9.3)
HER2+/ER- N = 116	22 (8.4)	26 (7.7)	24 (5.6)	44 (6.0)
Luminal B N = 137	19 (7.3)	26 (8.7)	46 (12.4)	46 (10.7)
Unclassified N = 150	41 (15.7)	38 (11.3)	38 (10.1)	33 (7.5)
Total: 1,424 P ^c <0.0001	260 (100)	321 (100)	378 (100)	465 (100)

75% circa dei tumori mammari

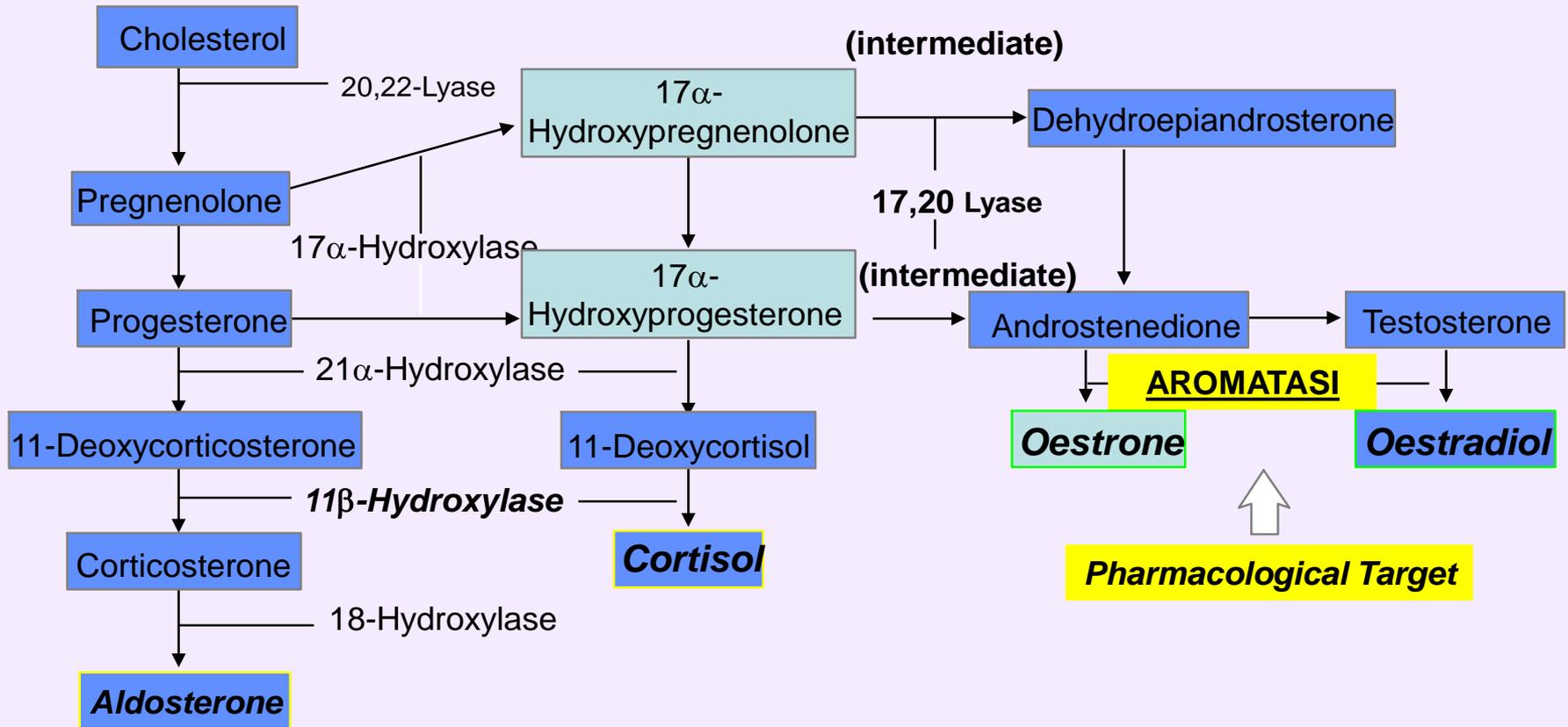


ER-positivi e/o PgR-positivi

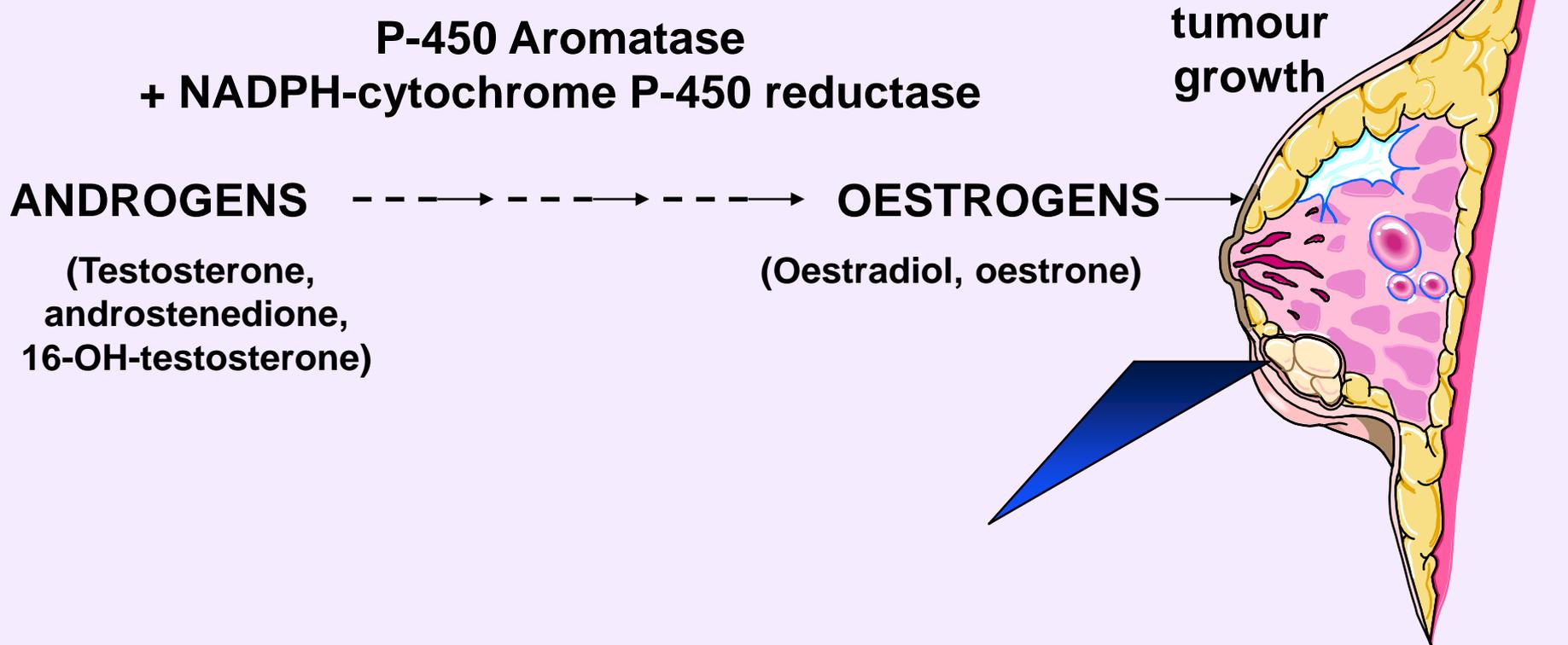
Attività e sintesi dell'estradiolo



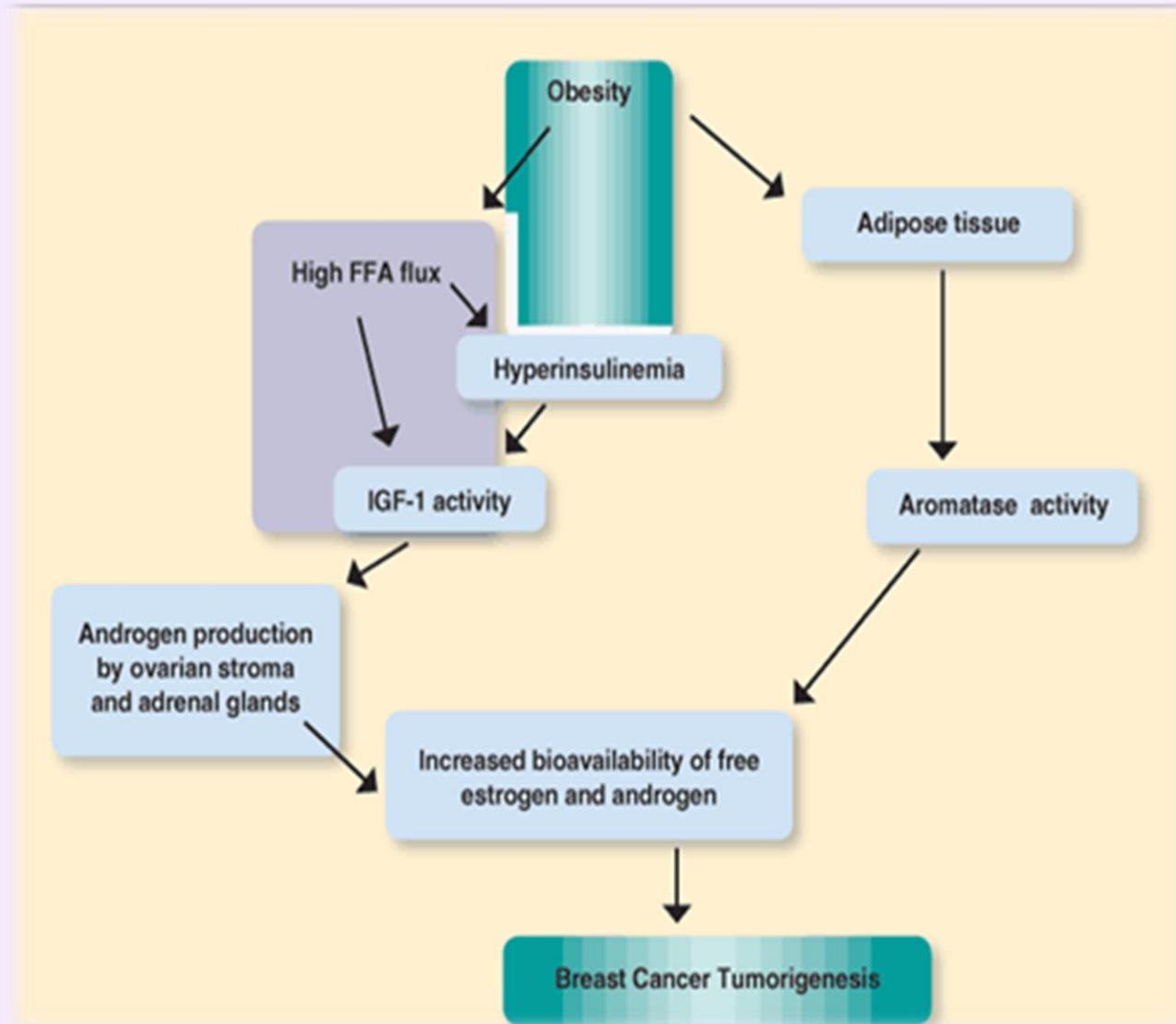
Biosintesi degli Estrogeni



Attività dell'enzima aromatasi



Breast Cancer Tumorigenesis



Aumento di peso dopo la diagnosi di carcinoma della mammella: possibili cause

- INCREASED FOOD INTAKE
(‘food cravings’)
- DECREASED PHYSICAL ACTIVITY
- CHEMOTHERAPY
- HORMONAL TREATMENT

Evidenze



“High prevalence of overweight and obesity in breast cancer patients at diagnosis”

“A body weight gain during and after adjuvant treatment is frequently observed”

*mean gain: 2.5 - 6.2 kg
in the first year after diagnosis*



Nutrition and survival after the diagnosis of breast cancer: a review of the evidence. Rock CL et al.

J Clin Oncol 2002



- **Weight gain is common among women diagnosed with breast cancer and usually ranges between 1 and 6 kg during the first year after a diagnosis of breast cancer**

Demark-Wahnefried W et al, J Am Diet Assoc 1997

- **Weight gain is associated with negative effects on health outcomes, such as lower quality of life (QoL) and poor breast cancer prognosis**

Irwin ML et al, J Clin Oncol 2005

Kroenke CH et al, J Clin Oncol 2005

Marianne Ewertz et al, J Clin Oncol 2011

“Weight gain is a common side effect of adjuvant chemotherapy for breast cancer”

⇒
body composition changes
(lean body mass)



Weight and body composition changes during and after adjuvant chemotherapy in women with breast cancer.

Freedman RJ et al.

J Clin Endocrinol Metab 2004

Changes in weight, body composition and factors influencing energy balance among premenopausal breast cancer patients receiving adjuvant chemotherapy. Demark-Wahnefried W et al.

J Clin Oncol 2001

“Weight gain is a common side effect of adjuvant chemotherapy for breast cancer”



lack of exercise
(nausea and fatigue)

Weight gain and recovery of pre-cancer weight after breast cancer treatments: evidence from the women's healthy eating and living (WHEEL) study. Saquib N et al.

Breast Cancer Res Treat 2007

Changes in body fat and weight after a breast cancer diagnosis: influence of demographic, prognostic, and lifestyle factors. Irwin ML et al.

J Clin Oncol 2005



“Weight gain is a common side effect of adjuvant chemotherapy for breast cancer”

⇒ *premature menopause*



*Adjuvant treatment and onset of menopause predict weight gain after breast cancer diagnosis. Goodwin PJ et al.
J Clin Oncol 1999*

“Weight gain is a common side effect of adjuvant chemotherapy for breast cancer”

resting energy expenditure

pathways perturbation

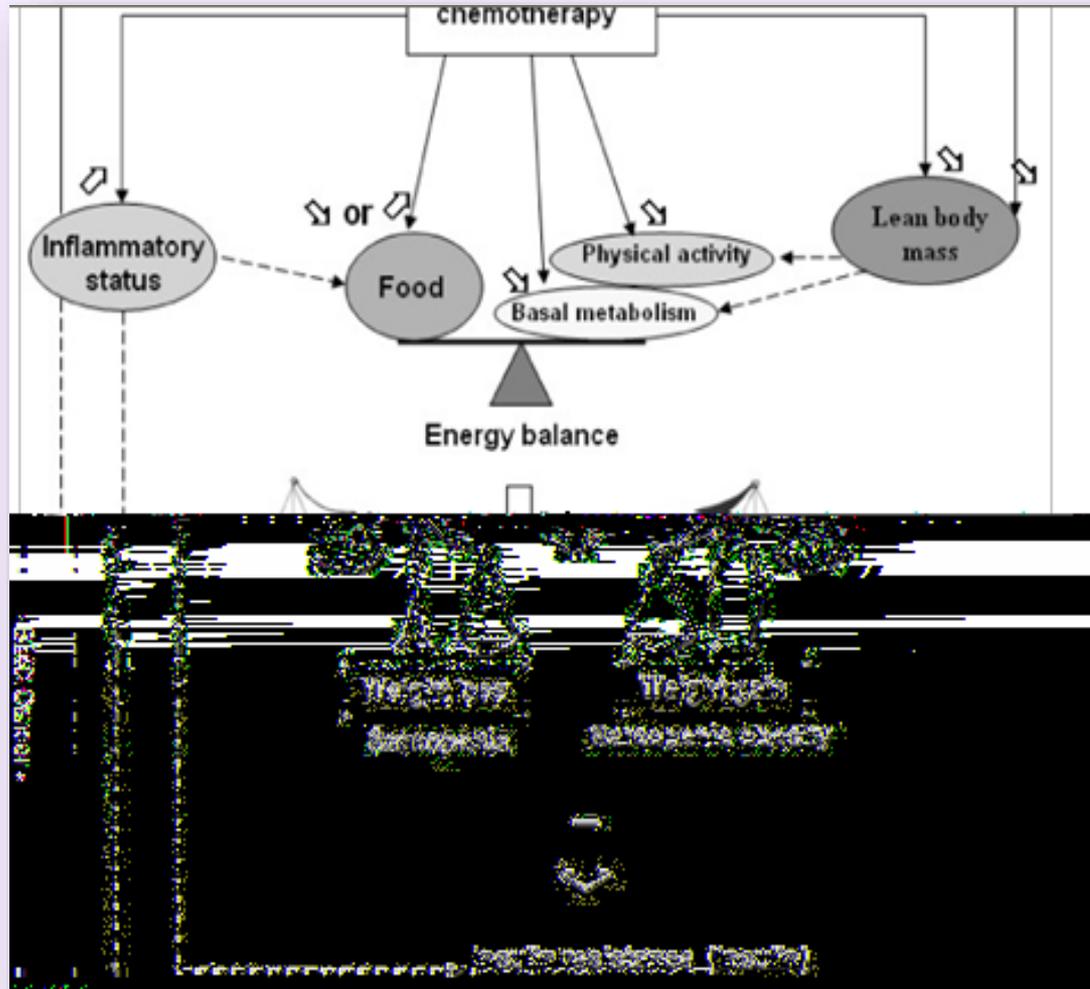
→ (↓ during CT and ↑ after
due to ↑ FFM)

Weight gain in women with breast cancer treated with adjuvant cyclophosphamide, methotrexate and 5-fluorouracil: Analysis of resting energy expenditure and body composition Del Rio G.,.....Federico M, Breast Cancer Research and Treatment 2002

Serum Molecular Signatures of Weight Change during Early Breast Cancer Chemotherapy. Hector C. et al. Clin Cancer Res 2009



Possible mechanisms to explain weight change during chemotherapy treatment of breast cancer



Processo di **insulino resistenza**

Fattori
genetici

Alimentazione
e stile di vita

Farmaci

Fattori
ormonali

Insulino resistenza:

le cellule non reagiscono all'insulina e quindi non assorbono il glucosio

Obesità

Diabete di
tipo 2

Aterosclerosi

Ipertensione

CHEMOTHERAPY AND WEIGHT GAIN

- ❑ CMF Regimen: 2-6 Kg
due to increase of fat and total body water
- ❑ Anthracycline-based regimens: 3 Kg
- ❑ mTOR inhibitors:metabolism disorders

Anomalie metaboliche più frequenti in corso di trattamento con terapie inibitori mTOR

- ▣ IPERGLICEMIA
- ▣ IPERCOLESTEROLEMIA
- ▣ IPERTRIGLICERIDEMIA



- **Antiestrogenic therapy (tamoxifen or AIs) is an effective treatment for patients with hormone receptor–positive breast cancer**

Early Breast Cancer Trialists' Collaborative Group (EBCTCG), Lancet 2005

Dowsett M et al, J Clin Oncol 2010

- **Up-front AIs for 5 years and sequential therapy with tamoxifen for 2 to 3 years followed by AIs provide more benefit than 5 years of tamoxifen alone (at least in the postmenopausal situation)**

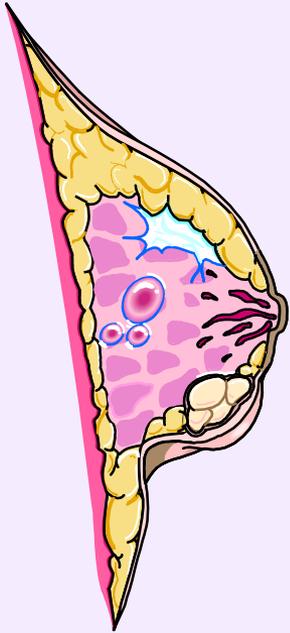
Jakesz R et al, Lancet 2005

Jonat W et al, Lancet Oncol 2006

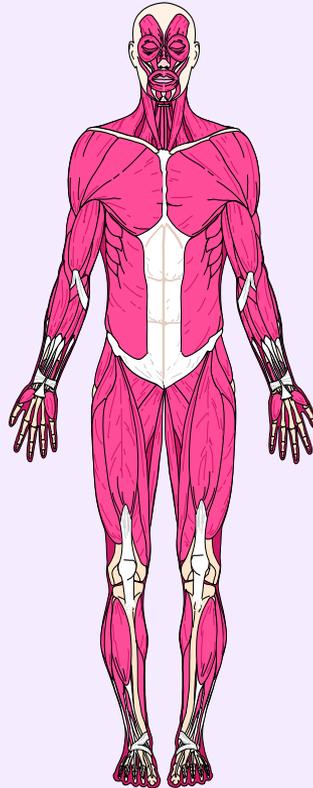
Coomes Rc et al, Lancet 2007

Burstein HJ et al, J Clin Oncol 2010

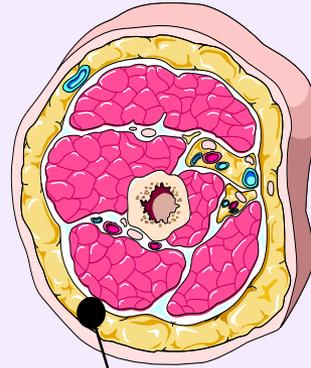
Siti di aromatizzazione periferica



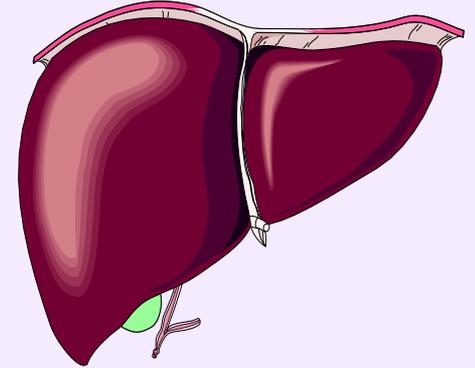
**Tessuto
tumorale
mammario**



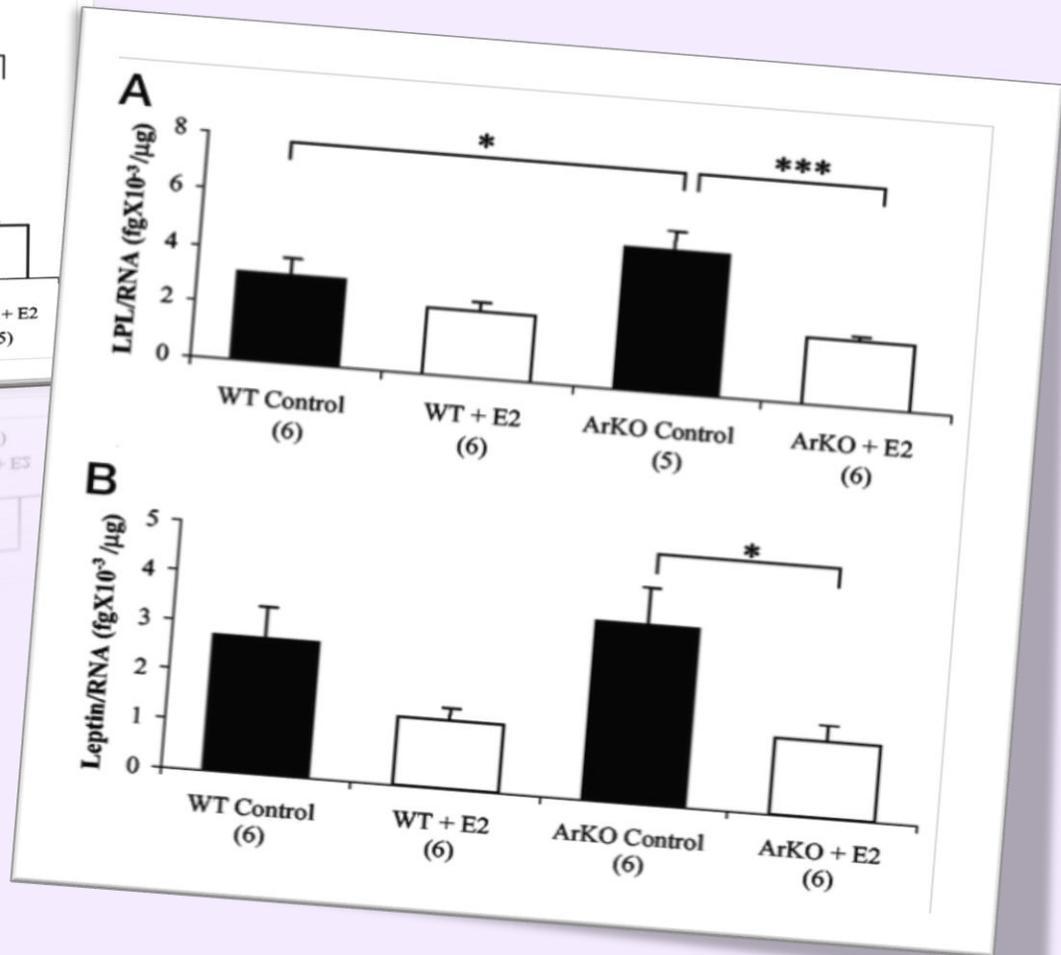
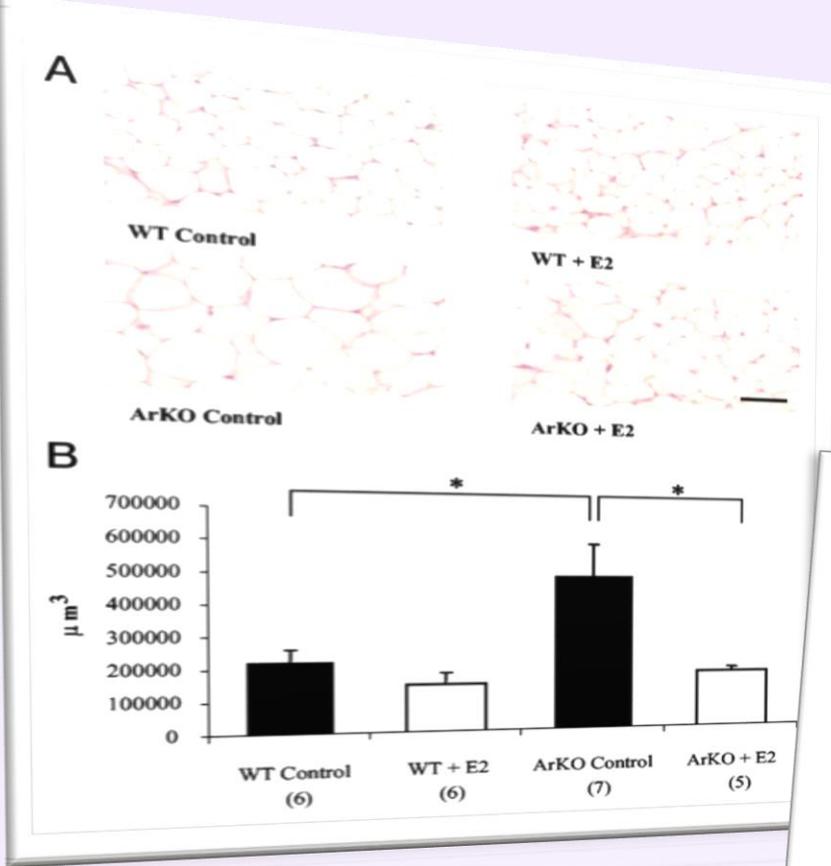
Muscoli



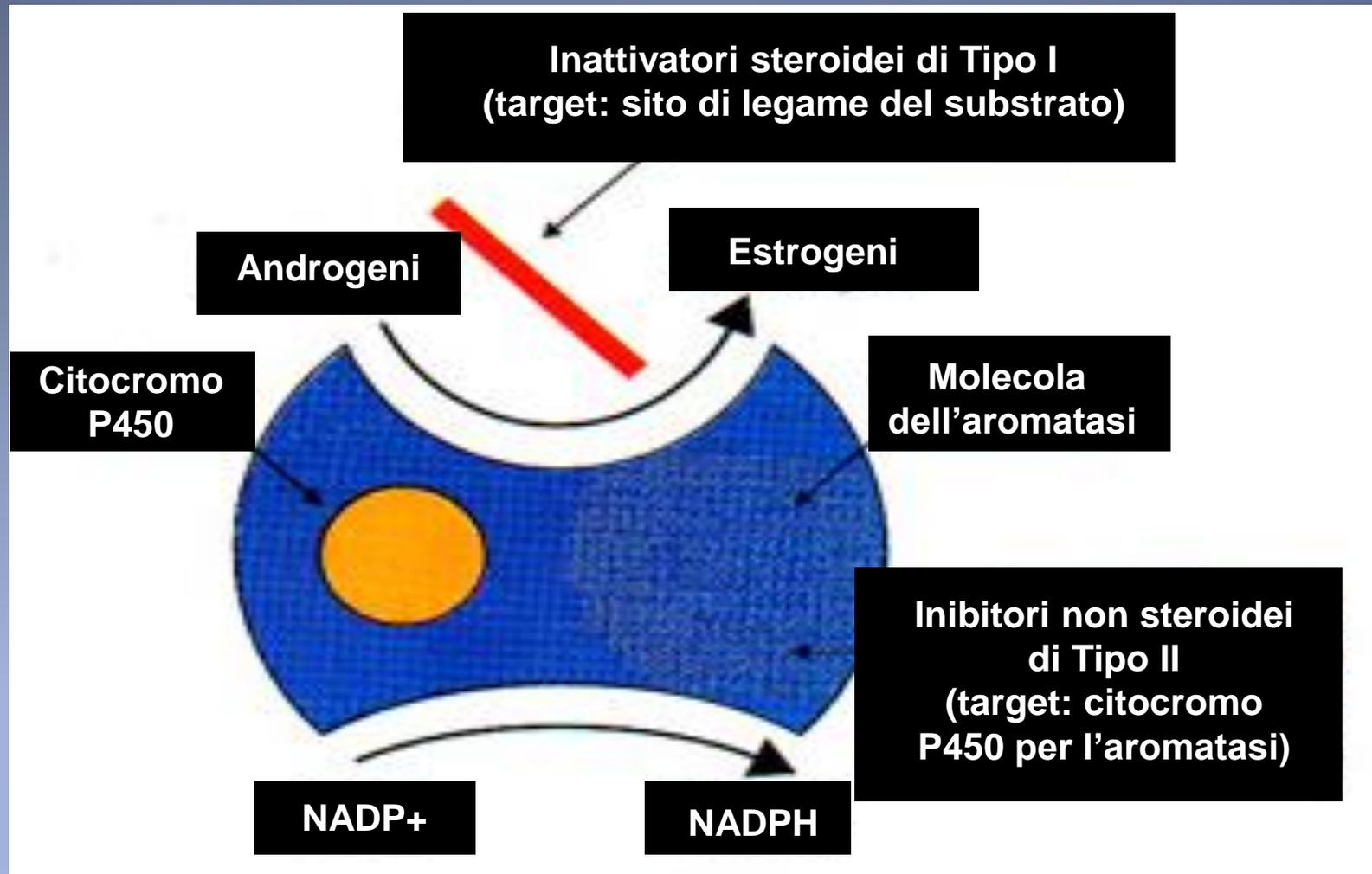
**Tessuto
adiposo**



Fegato



Meccanismo d'azione degli inibitori dell'aromatasi

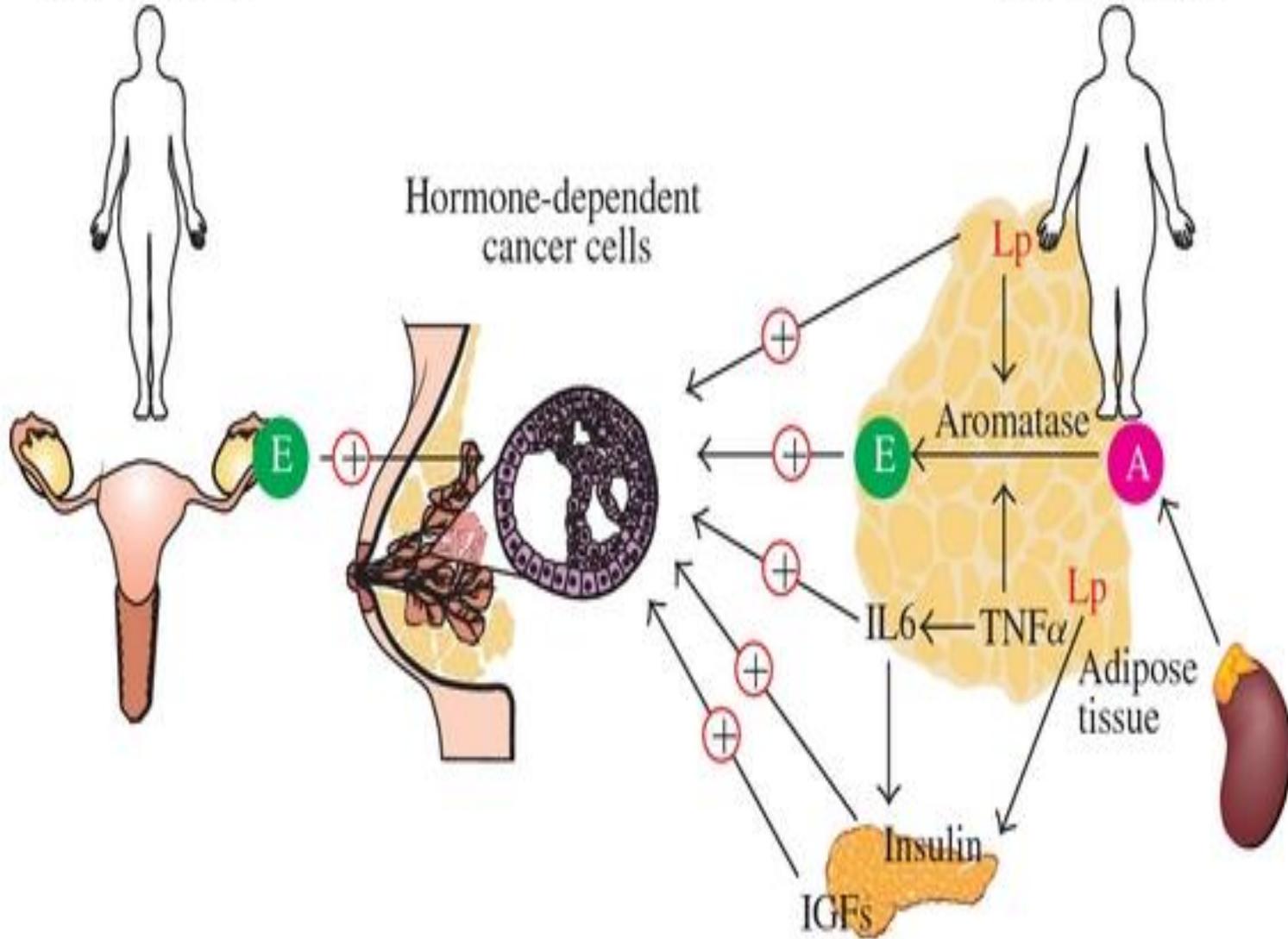


Effetti dell'obesità sulla produzione ormonale

Premenopause

Postmenopause

Hormone-dependent cancer cells



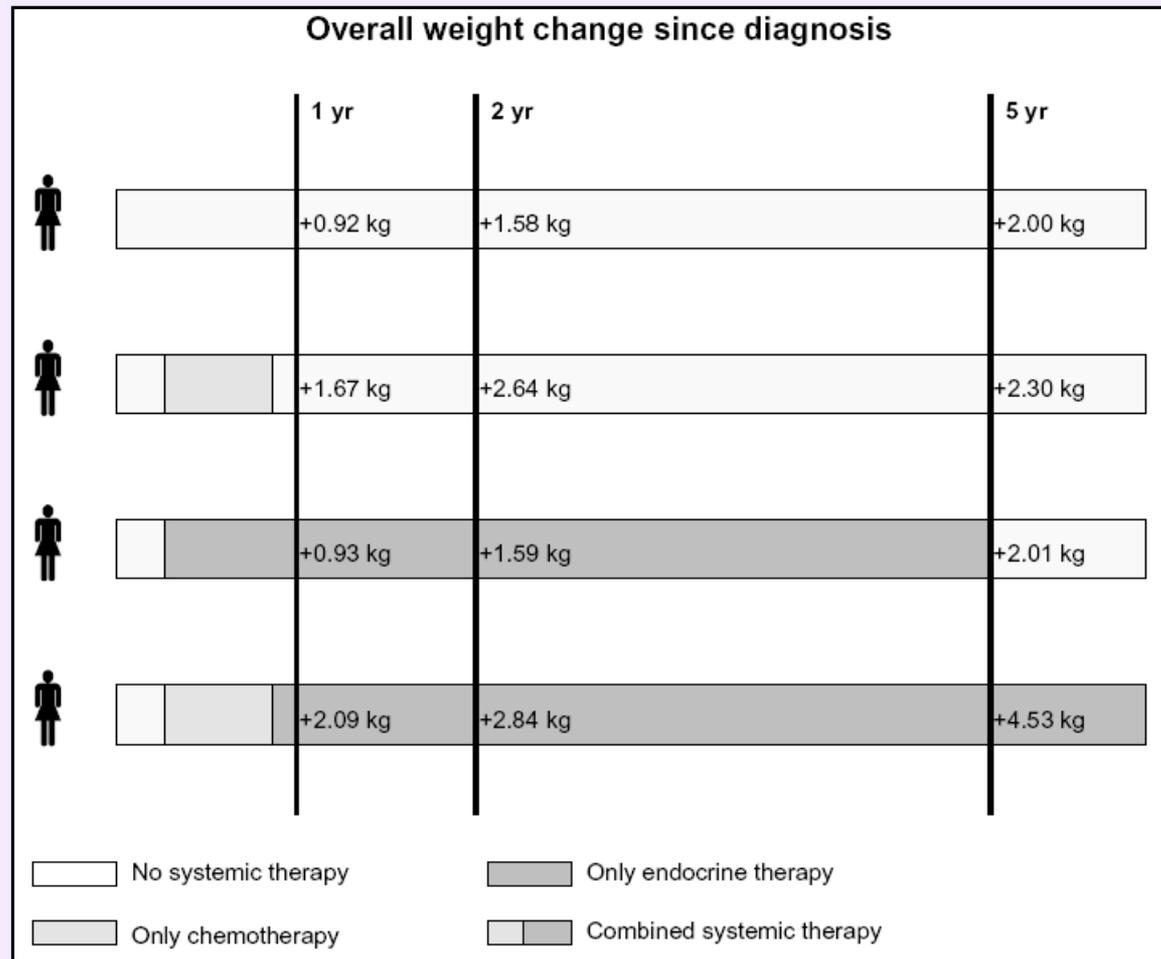
Breast Cancer Res Treat (2007) 105:177–186
DOI 10.1007/s10549-006-9442-2

EPIDEMIOLOGY

Weight gain and recovery of pre-cancer weight after breast cancer treatments: evidence from the women's healthy eating and living (WHEL) study

**Nazmus Saquib · Shirley W. Flatt · Loki Natarajan ·
Cynthia A. Thomson · Wayne A. Bardwell ·
Bette Caan · Cheryl L. Rock · John P. Pierce**

**Chemotherapy was significantly associated
with weight gain (OR = 1.65, 95% CI = 1.12, 2.43)
and Tamoxifen was not (OR = 1.03, 95% CI = 0.71, 1.51)**



Schematic overview of overall weight change since breast cancer diagnosis for treatment-specific groups, based on multi-level regression analysis

Body weight gain after breast cancer diagnosis

- ✓ development of other diseases
(diabetes, cardiovascular problems)
- ✓ negative impact on self-image
and quality of life



*Weight, weight gain, and survival after breast cancer diagnosis. Kroenke CH et al.
J Clin Oncol 2005*

*Post-diagnosis weight gain and breast cancer recurrence in women with early stage breast cancer. Caan BJ et al.
Breast Cancer Res Treat 2006*

*Obesity and cancer: the risks, science, and potential management strategies. McTiernan A.
Oncology 2005*

Body weight gain after breast cancer diagnosis

✓ increased risk of recurrence

✓ reduced overall survival



*Weight, weight gain, and survival after breast cancer diagnosis. Kroenke CH et al.
J Clin Oncol 2005*

Post-diagnosis weight gain and breast cancer recurrence in women with early stage breast cancer. Caan BJ et al.

Breast Cancer Res Treat 2006

Obesity and cancer: the risks, science, and potential management strategies. McTiernan A.

Oncology 2005

Effect of Obesity on Prognosis After Early-Stage Breast Cancer

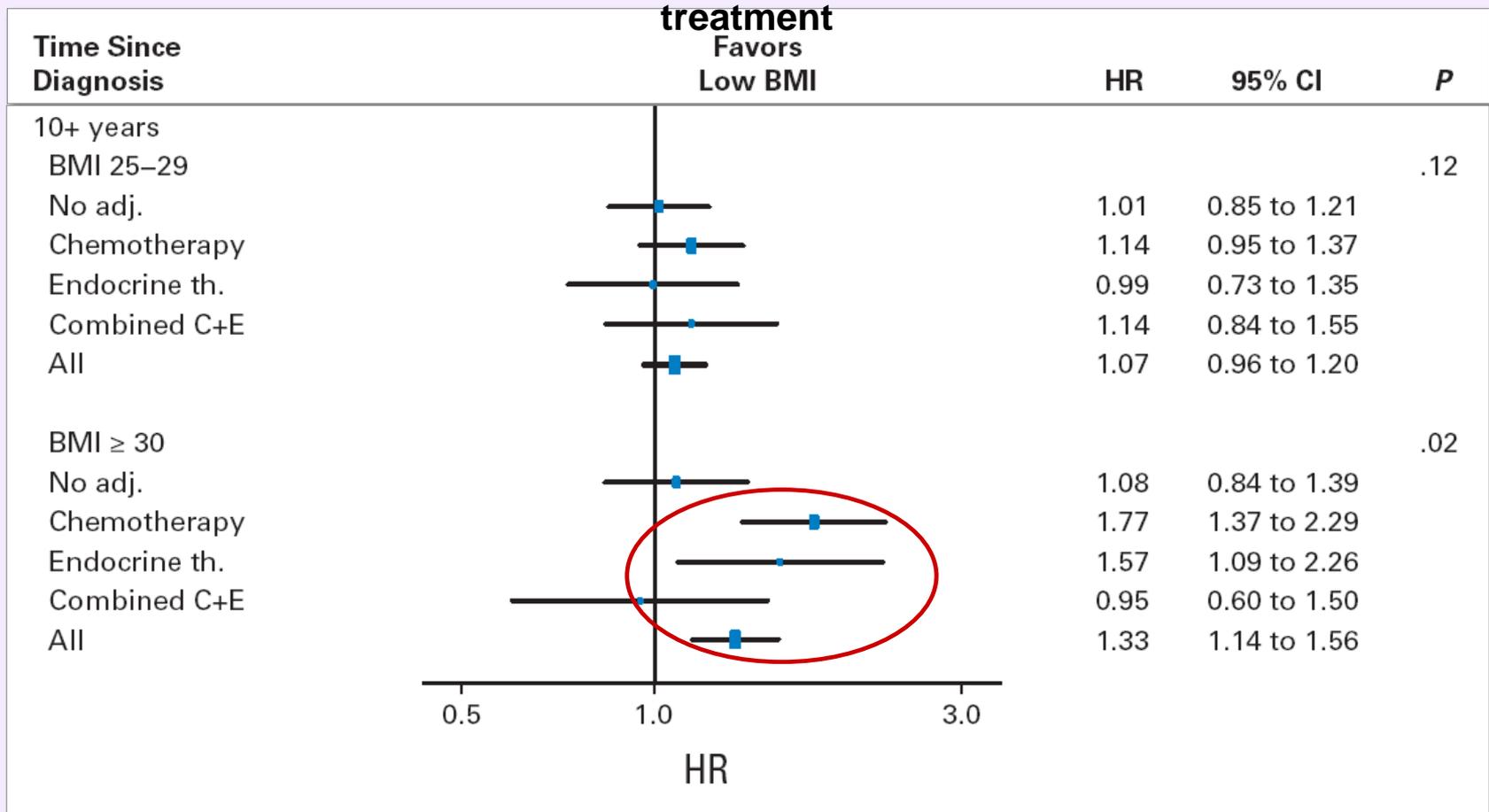
Marianne Ewertz, Maj-Britt Jensen, Katrín Á. Gunnarsdóttir, Inger Højris, Erik H. Jakobsen, Dorte Nielsen, Lars E. Stenbygaard, Ulla B. Tange, and Søren Cold

J Clin Oncol 2010

Obesity is an independent prognostic factor for developing distant metastases and for death as a result of breast cancer

On a long-term basis, adjuvant therapy seemed to be less effective for patients with breast cancer and obesity.

HR for death (all causes) in relation to follow-up time, BMI, and adjuvant treatment



After 10 years, both chemotherapy and endocrine therapy seemed to be less effective in patients with BMIs of 30 kg/m² or greater

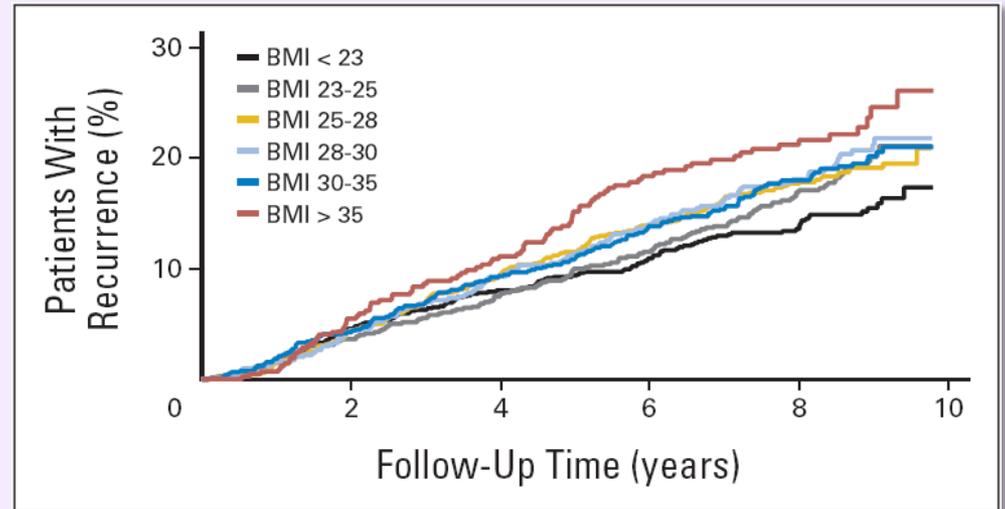
Effect of Body Mass Index on Recurrences in Tamoxifen and Anastrozole Treated Women: An Exploratory Analysis From the ATAC Trial

Ivana Sestak, Wolfgang Distler, John F. Forbes, Mitch Dowsett, Anthony Howell, and Jack Cuzick

J Clin Oncol 2010

ATAC study: 9366 postmenopausal women with early-stage breast cancer randomly assigned to oral daily anastrozole alone, tamoxifen alone, or the combination in a double-blind fashion

women with a high BMI at baseline had more recurrences than those women with a low BMI (adjusted HR, 1.39) and significantly more distant recurrences (adjusted HR, 1.46)



There is a significantly greater risk of recurrence in overweight women receiving anastrozole



Is estrogen suppression with anastrozole complete in obese women?

Women's Healthy Eating and Living Study

trial multicentrico, 3088 donne di età 18-70 anni con BC
(randomizzate entro 1 aa da intervento chirurgico)

WHEL

Dieta ad elevato contenuto di verdura,
frutta e fibre e a basso contenuto di grassi
(n=1537)

Controllo (n=1551)

Women's Intervention Nutrition Study

trial multicentrico, 2437 donne in post-menopausa con BC
(randomizzate entro 1 aa da intervento chirurgico)

WINS

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graph TD; WINS[WINS] --- A[Dieta a basso contenuto di grassi (n=975)]; WINS --- B[Controllo (n=1462)];
```

Dieta a basso contenuto di grassi
(n=975)

Controllo (n=1462)

WINS

- Dopo un follow up mediano di 60 mesi, 96 (9,8%) donne nel gruppo di intervento e 181 (12,4%) donne nel gruppo di controllo hanno avuto una recidiva (HR 0,76; 0,60-0,98)

WHEL

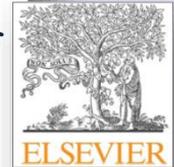
- *Among survivors of early stage breast cancer, adoption of a diet that was very high in vegetables, fruit, and fiber and low in fat did not reduce additional breast cancer events or mortality during a 7.3-year follow-up period*

Review

Physical activity, diet, adiposity and female breast cancer prognosis: A review of the epidemiologic literature

Ruth E. Patterson*, Lisa A. Cadmus, Jennifer A. Emond, John P. Pierce

Cancer Prevention and Control Program, Moores UCSD Cancer Center, University of California, 3855 Health Sciences Drive #0901, San Diego, La Jolla, CA 92093-0901, United States



Maturitas 66 (2010) 5–15

Strength of evidence	Incident cancer	Breast cancer prognosis
Convincing	Body fatness Alcoholic drinks	Body fatness
Probably	Low physical activity Abdominal fatness Adult weight gain	Low physical activity
Limited-suggestive	Total fat	
Limited-no conclusion	Diet (excepting total fat)	Alcoholic drinks Adult weight gain Abdominal fatness
No effect		Total fat Low fiber Fruits and vegetables

^a There are insufficient data regarding lifestyle and pre-menopausal breast cancer outcomes to draw any conclusions.

Progetto DIANA-5

Pazienti con carcinoma mammario infiltrante operato negli ultimi 5 anni
n = 2234



Visita antropometrica e prelievo ematico

(circonferenza vita, peso, pressione arteriosa, insulina, testosterone, glucosio, colesterolo totale, HDL, LDL, trigliceridi)



BASSO RISCHIO DI RECIDIVA

ALTO RISCHIO DI RECIDIVA

Randomizzazione
per ETA', ER, linfonodo sentinella



**GRUPPO
ARANCIONE**
(sola osservazione)
n = 649



**GRUPPO
VERDE**
(controllo)
n = 793

**GRUPPO
BLU**
(interv. alimentare e AF)
n = 792

Studio su base di popolazione del *Body mass index*

Il RTM ha intrapreso uno studio relativo all'influenza del body mass index sul rischio di neoplasia mammaria.

Grazie alla collaborazione dei centri di screening è stato possibile effettuare misurazioni di altezza e peso delle donne invitate al programma di screening mammografico.

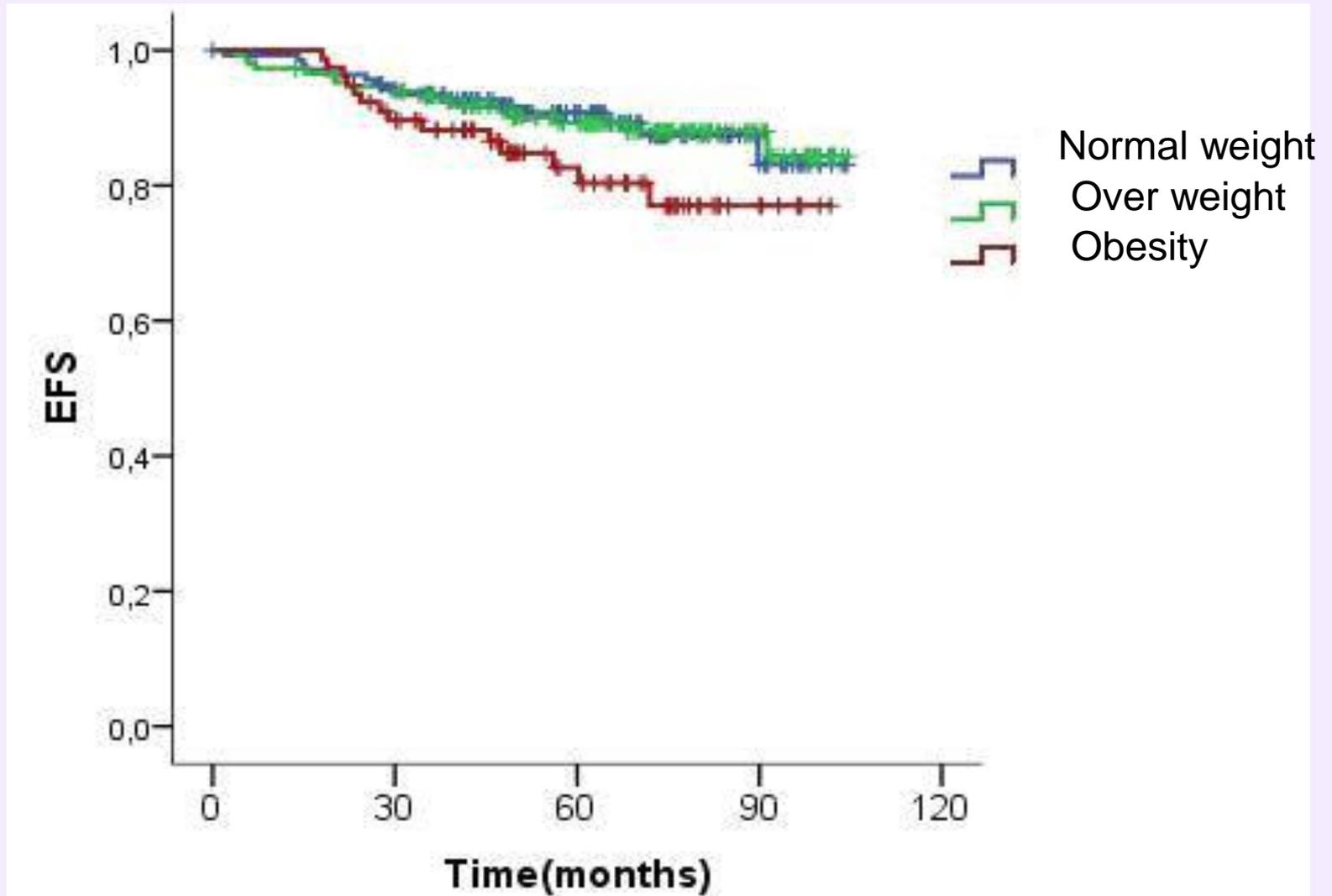
Risultati **su** 14.255 donne:

	N°	Casi	SIR
Normopeso	6443	49	1.25
Sovrappeso	5334	60	1.85*
Obesità	2478	27	1.79*

* *statisticamente significativo*



Increased incidence and poor prognosis of breast cancer in postmenopausal women with high Body Mass Index attending to the Mammography Screening Program in the province of Modena (Italy)





Emili si propone come servizio di consulenza sullo **stile di vita** rivolto alle donne operate per tumore della mammella. Il rationale del servizio è sostenuto da un'ampia evidenza scientifica che correla un aumento del rischio di recidive di tumore mammario all'eccessivo peso corporeo e alla sedentarietà. Obiettivo primario del servizio è quindi quello di fornire un programma di **educazione alimentare e al movimento** alle donne operate per carcinoma della mammella. Tale percorso può avere, inoltre, un effetto positivo sullo stato di benessere generale in termini di miglioramento della qualità della vita.

Attraverso la promozione di sane abitudini e di una migliore qualità di vita, il servizio Emili può aiutare le donne a prendersi cura di se stesse!

SERVIZIO DI CONSULENZA SULLO STILE DI VITA PER LA PREVENZIONE DELLE RECIDIVE NELLE PAZIENTI CON CARCINOMA MAMMARIO



alimentazione ✓
attività fisica ✓
prevenzione ✓
stile di vita ✓
salute ✓
ovvero...
Imparare a volersi bene!

Responsabile del servizio
Dott.ssa Laura Cortesi
Medico di Riferimento
Dott.ssa Federica Sebastiani
Dietista
Dott. Filippo Valoriani

CONTATTI

federica.sebastiani@gmail.com



Per lasciare un messaggio
tel. 059 4222230 dalle 8 alle 18:30

STILE DI VITA E ALIMENTAZIONE

L'esperienza del Progetto Emili



UNIVERSITÀ DEGLI STUDI
DI MODENA E REGGIO EMILIA



SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Ospedaliero-Universitaria di Modena



OBIETTIVI

Programma di educazione alimentare e al movimento rivolto alle donne operate per carcinoma della mammella

Obiettivi: valutare l'efficacia di un programma di educazione alimentare e al movimento su:

- parametri antropometrici
(*BMI, peso corporeo*)
- Livello di attività fisica
- Miglioramento della qualità di vita

Analisi attività ambulatoriale Gen 2010-Sett 2014

Campione

N° donne sottoposte alla prima visita: **268**

N° donne con un follow up di 6 mesi: **193**

N° donne con un follow up di 12 mesi: **149**

N° donne con un follow-up di 24 mesi: **90**

Variabili considerate

PESO (kg)

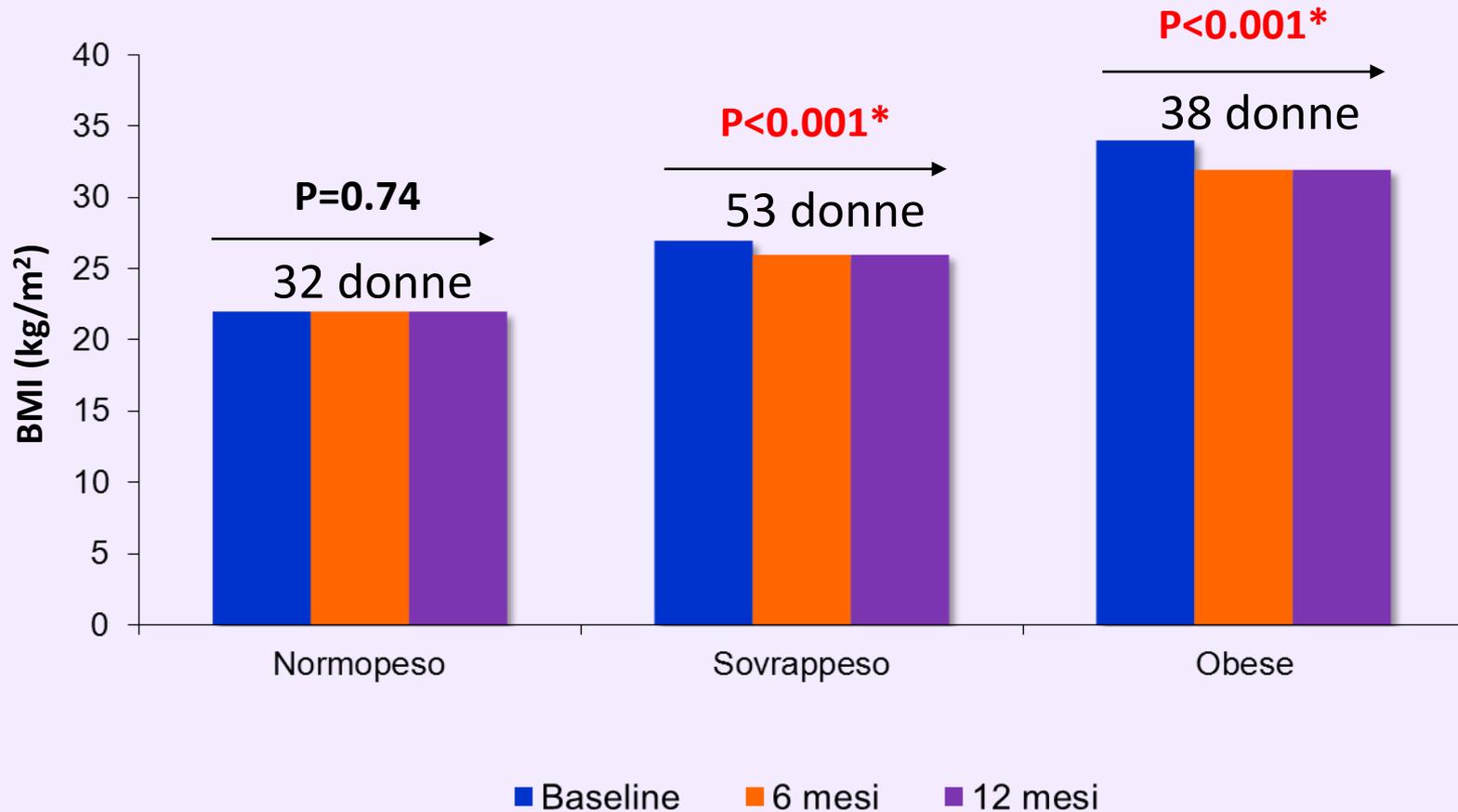
BODY MASS INDEX (Kg/m²)

ATTIVITÀ FISICA PROGRAMMATA (ore/settim)

Campione: donne (n=123) con un follow up di 12 mesi



Analisi per strato di BMI

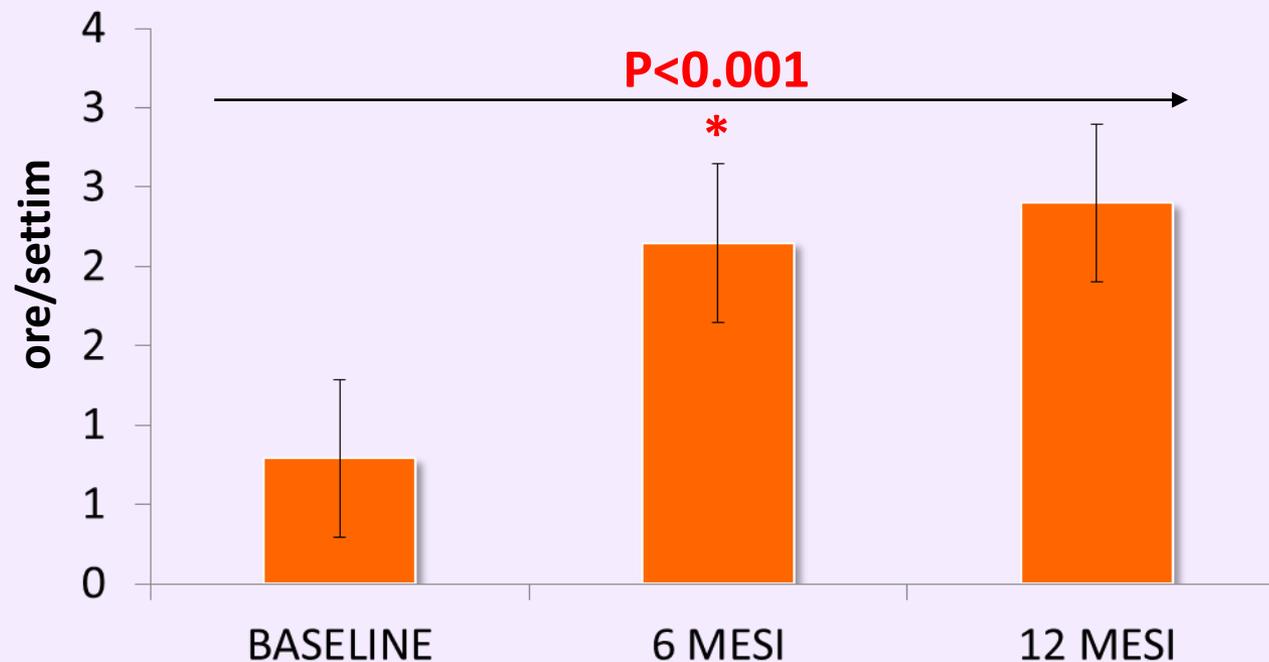


* differenza statistica con $p < 0.05$

Campione: donne (n=123) con un follow up di 12 mesi



Attività fisica media



* differenza statistica con
 $p < 0.05$

Conclusioni

- L'analisi preliminare dei dati raccolti in 57 mesi di attività dimostra come una corretta alimentazione ed un regolare esercizio fisico possano favorire una significativa riduzione del peso corporeo
- Il controllo del peso e del livello di attività fisica attraverso strategie di intervento sullo stile di vita dovrebbe rappresentare parte integrante del follow up delle pazienti con tumore della mammella

Grazie per l'attenzione...