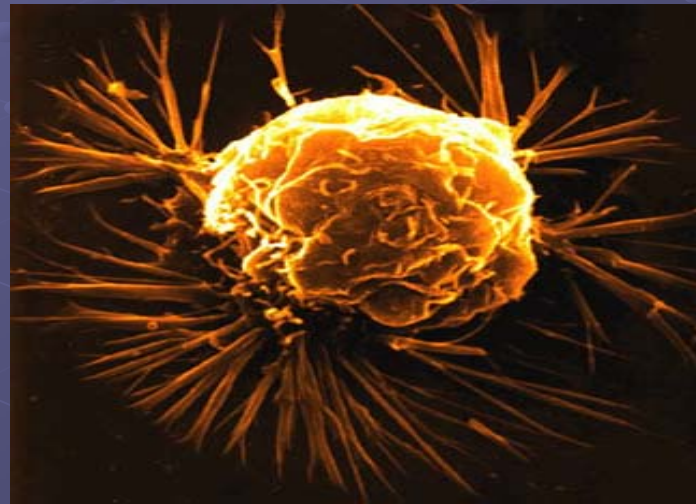


Weight gain after treatment for breast cancer

Ana Maria Barberia
PhD Research study



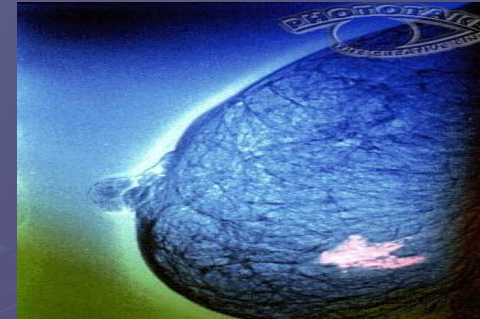
Supervisory Team
Prof Kerr, Prof Hickish, & Prof Thomas

Breast Cancer



- Most common cancer in the UK: 126 new cases per day
- Incidence increasing since recording started due to:
 - Screening programme
 - Exposure to sex hormones:
 - HRT use since the 90s
 - Obesity
- 80% survival at 5 years
- **PROBLEM:** Weight gain and/or increase in body fat after diagnosis?

Weight gain after breast cancer



Author	Follow up	Participants	Weight gain	Body composition
Camoriano 1990	1.3 yrs	545	Premenopausal : 5.9 kg Postmenopausal: 1.8-3.6 kg	No data
Goodwin 1999	1 yr	445	1.6 kg	↑ Waist circ: 1.0 cm
Irwin 2005	2 yrs	514	1.7 kg	↑Fat Mass: 2.1%
Kroenke 2005	8 yrs	5204	23% lost > 0.5 kg/m ² of BMI 32% gained 0.5-2.0 kg/m ² 14% gained > 2.0 kg/m ²	No data
Rock 1999	2 yrs	1116	2.7 kg	No data
Gould 1999	4.4 years	442 healthy women	0.56 kg per year	

Is weight gain a concern?

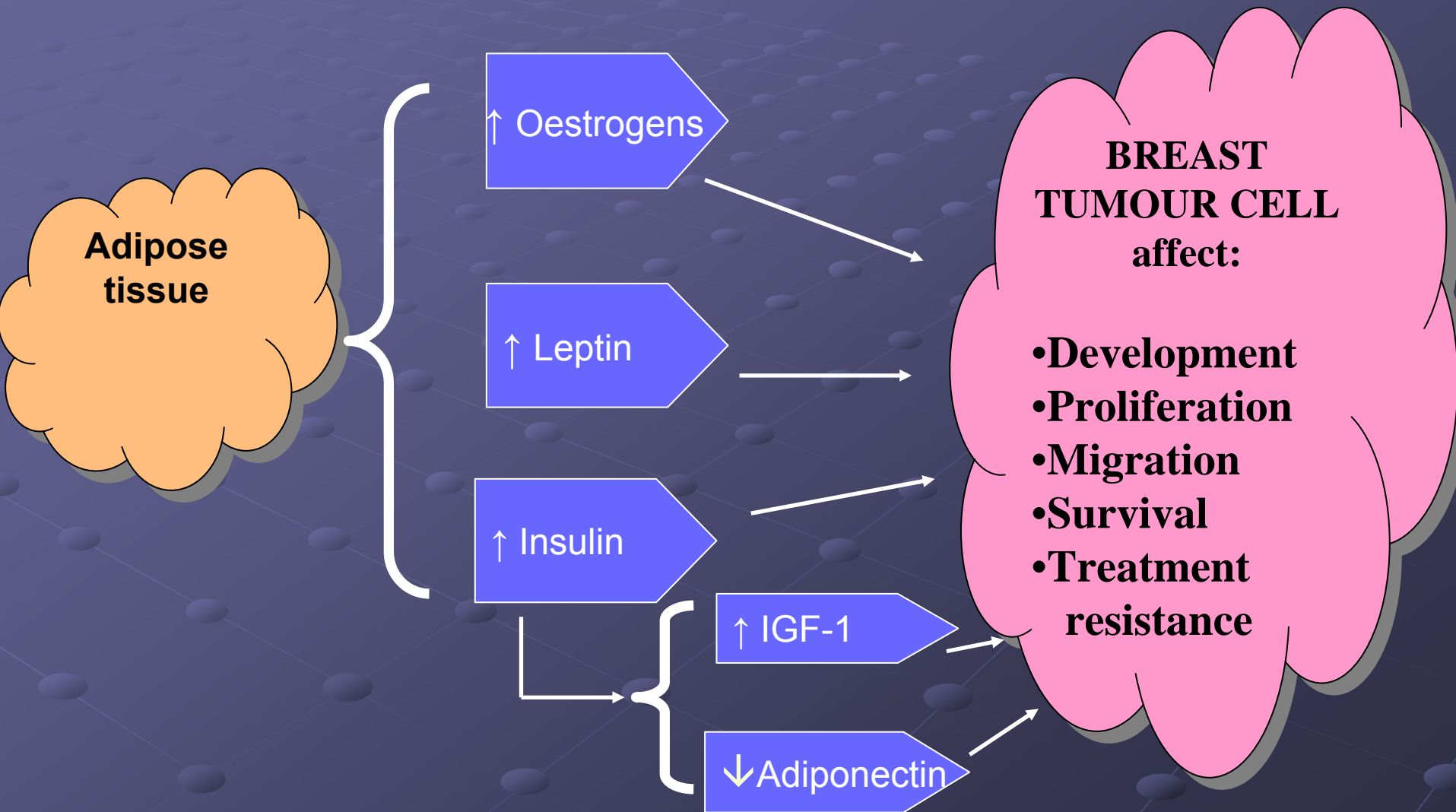
Increased levels of adiposity:

- ↑ Breast cancer risk in postmenopausal women
(1.29, 95%CI: 1.22, 1.36)
- Poorer cancer prognosis:
 - ↑ risk of recurrence (1.78, 95%CI: 1.50, 2.11)
 - ↑ risk of death (1.36, 95% CI: 1.19, 1.55)

Weight gain of +3 kg after diagnosis:

- ↑ risk of recurrence (1.4, 95%CI: 1.02, 1.92)
- ↑ risk of death (1.35, 95%CI: 1.00, 1.82)

Association between adiposity and breast cancer



Factors associated with weight gain after breast cancer

● Explored factors: treatment and lifestyle

No conclusive data:

- Different treatments used
- Not well designed studies looking at the effect of anti-oestrogen therapy (Tamoxifen and Aromatase Inhibitors)
- Large length of periods between weight measures
- Bias: self selection, social desirability

● Unexplored factors for weight gain after cancer

- Genes related to common forms of obesity: FTO, Mc4R
- Effect of treatment on hormones and cytokines regulating body weight homeostasis: leptin, ghrelin, insulin, adiponectin

Aims



To identify:

- **Factors associated with weight gain with breast cancer treatment**
- **Metabolic consequences of weight gain**

Methods

- **Retrospective**

- **Population: 316 women with primary invasive breast cancer D_x between 2003-2007**

- **Data sources:**

- **Medical notes**
- **Fasting blood sample: DNA, fasting insulin & glucose levels**
- **Weight, BMI, waist circumference & body composition**

Findings

N = 116

Participants completed:

- 1 year: 116 women
- 2 years: 92 women
- 3 years: 67 women
- 4 years: 42 women

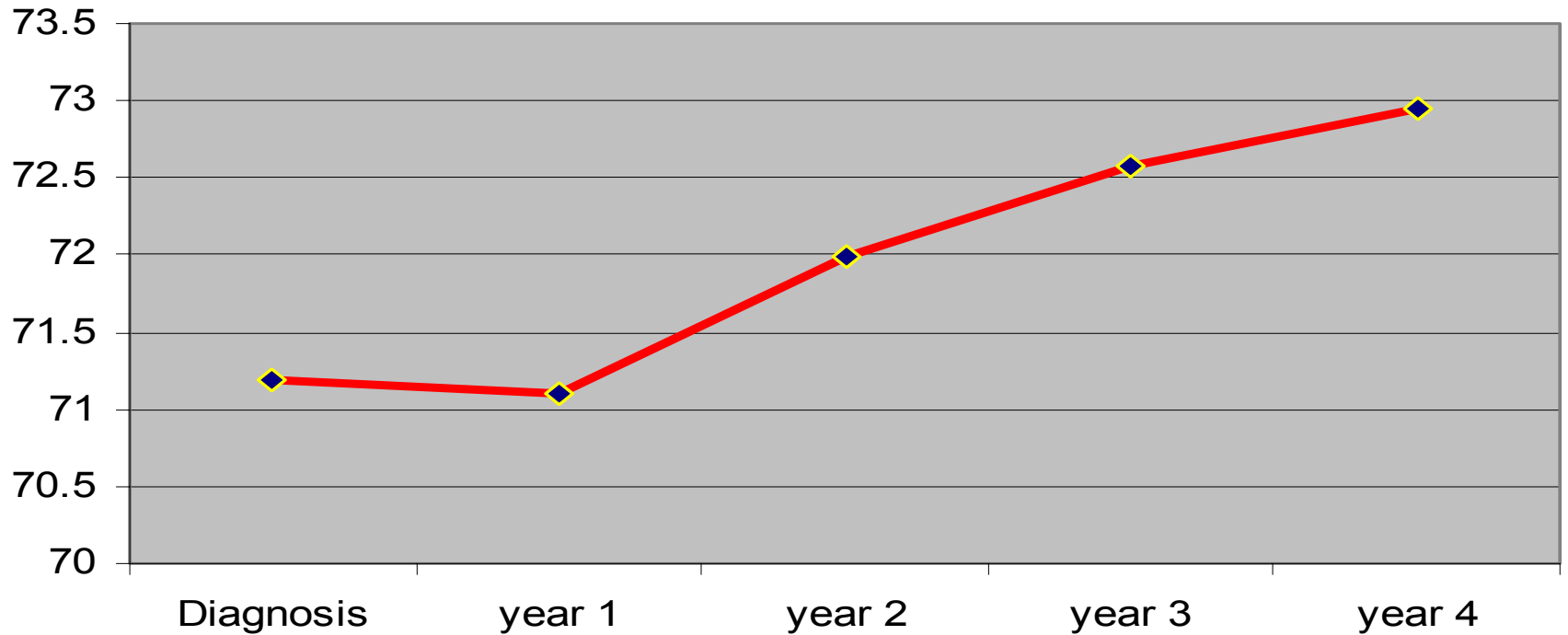
● Age at diagnosis: 56.8 yrs

● 72.4% postmenopausal

● Number treated with:

- Chemotherapy: 77
- Anti-oestrogen-therapy: 98
- None of those: 4

Weight (kg)



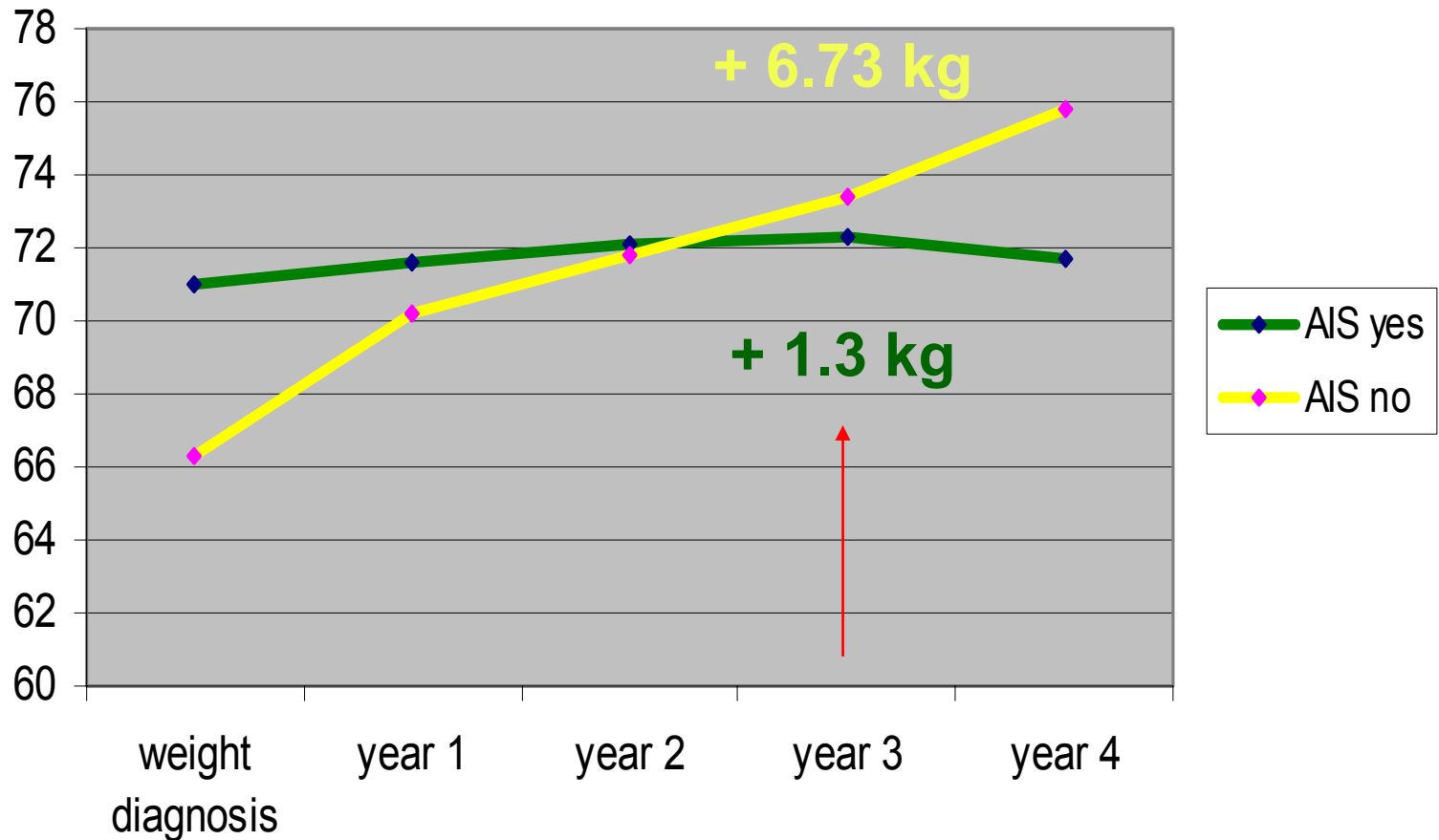
Not associated with:

- Chemotherapy or Tamoxifen
- Menopausal variables
- Age
- Genes related to obesity

Associated with:

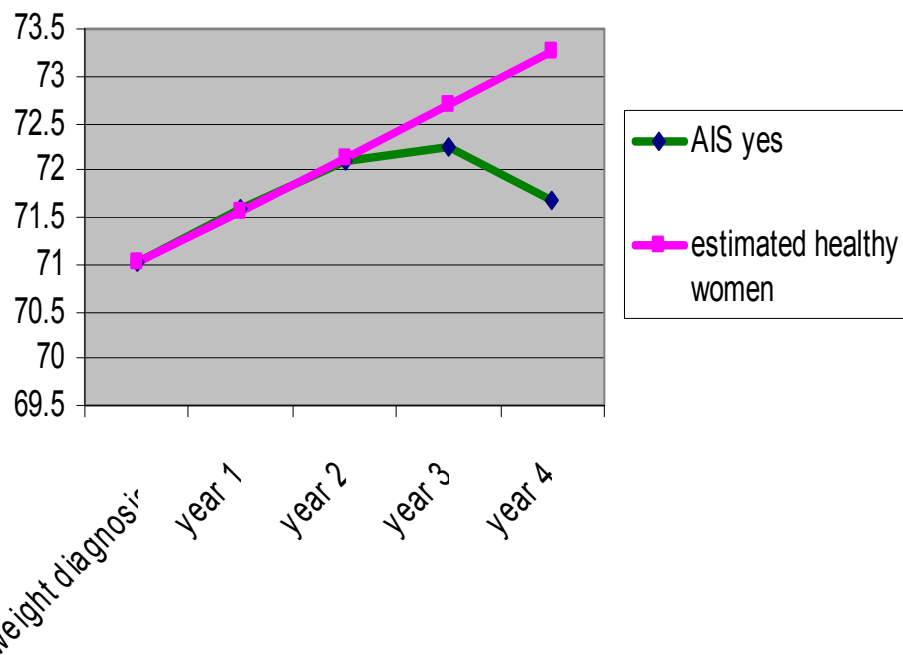
- Anti-oestrogen therapy: Aromatase inhibitors

Aromatase Inhibitors

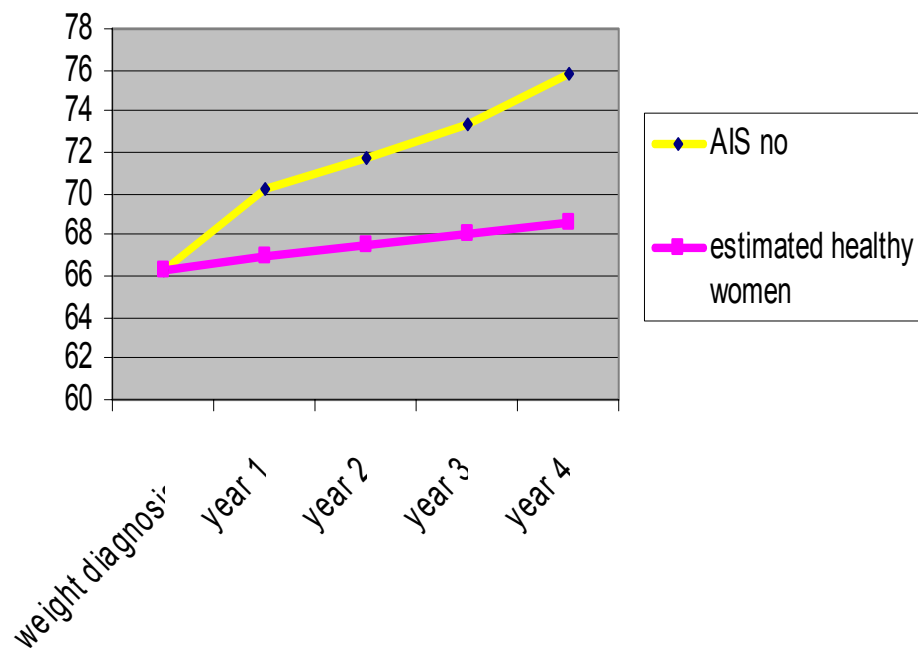


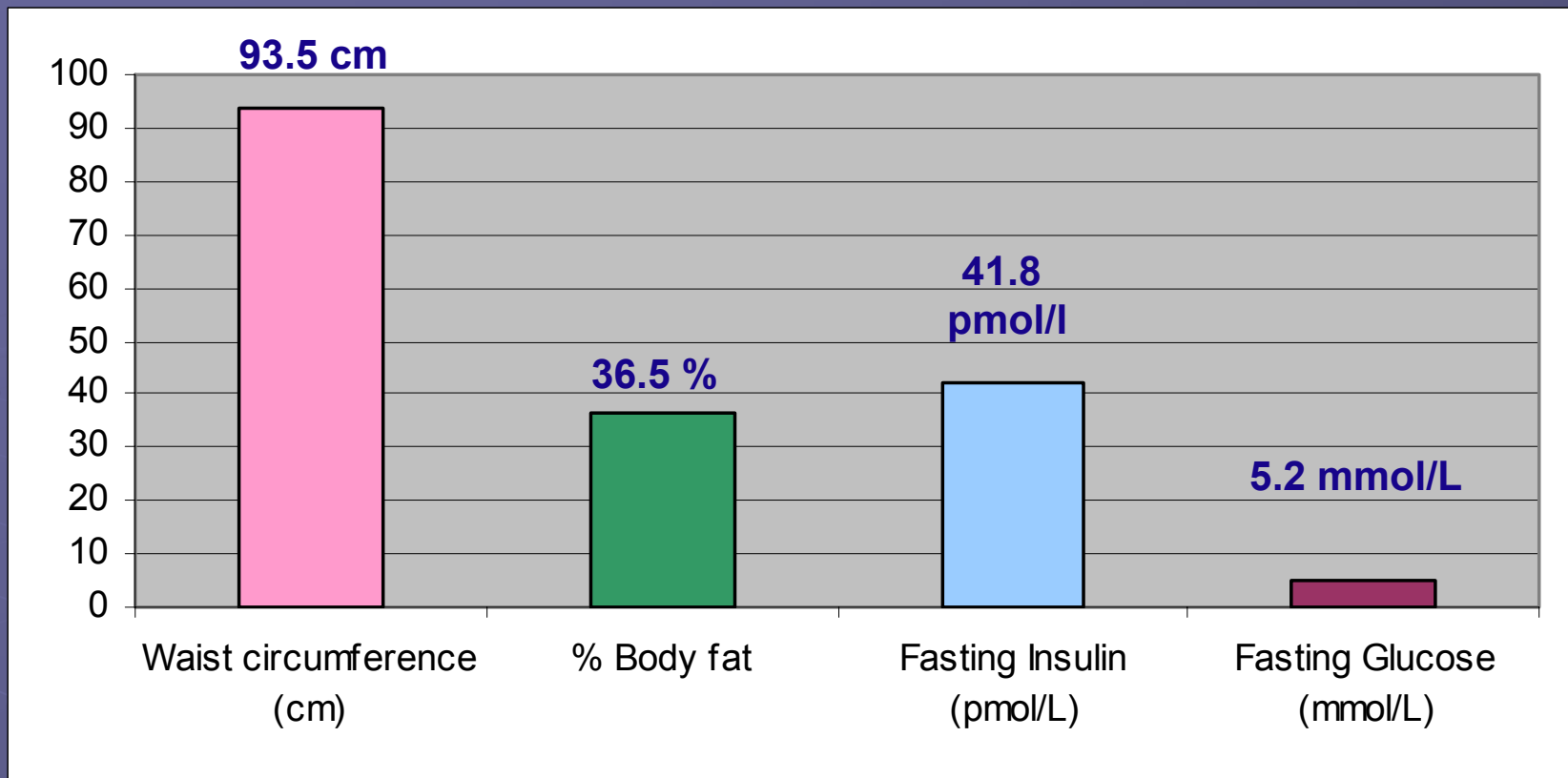
Compared with cohort of healthy women

Aromatase Inhibitors



No Aromatase Inhibitors



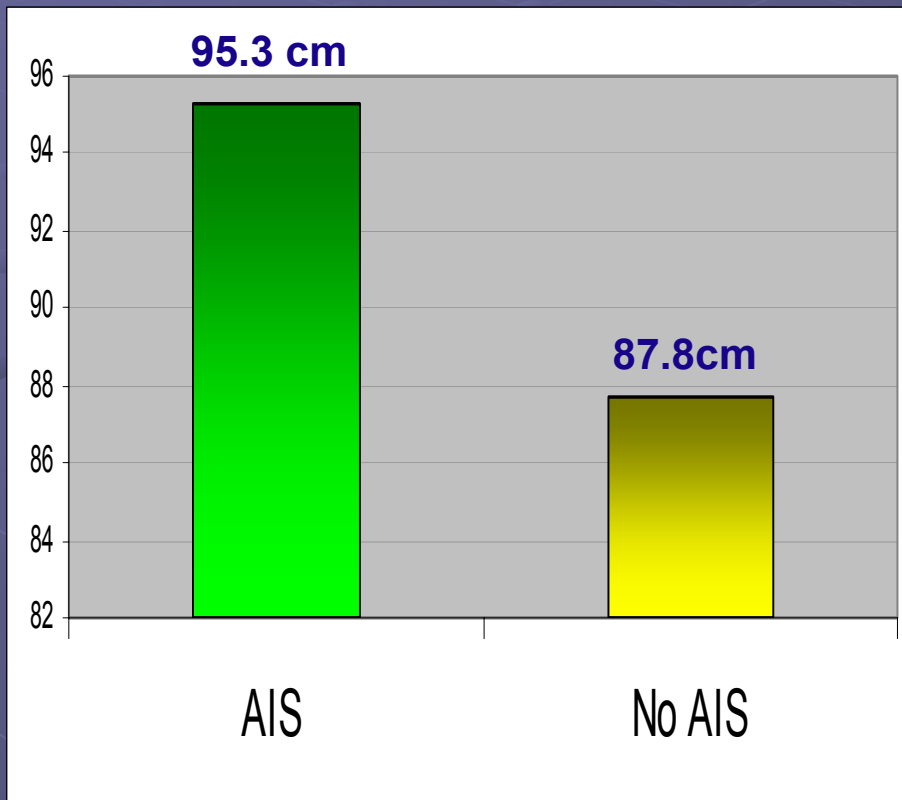


Not associated with:

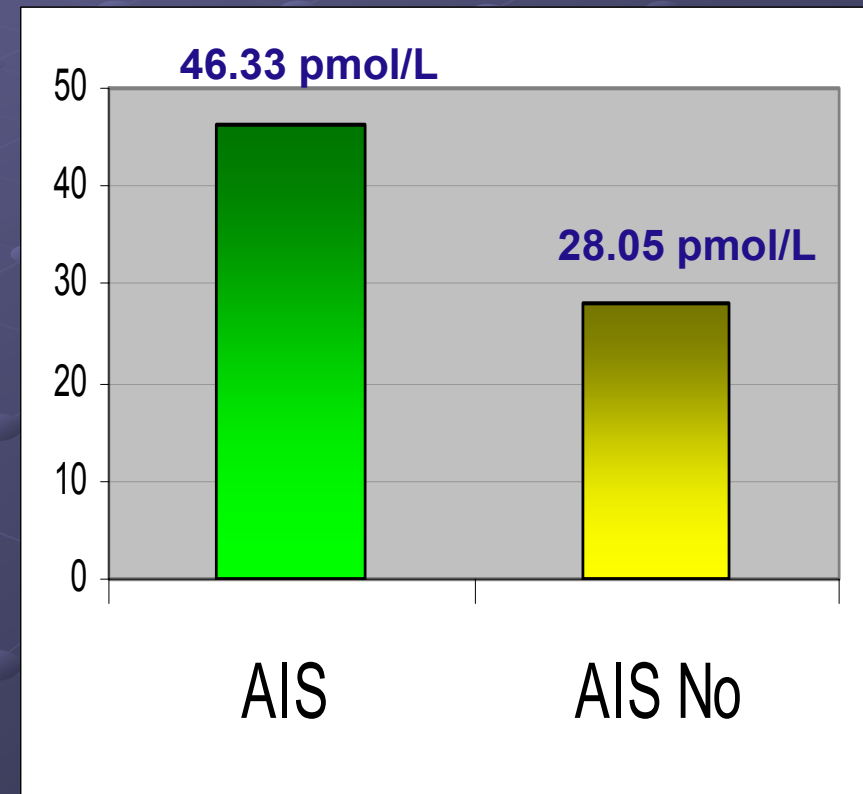
- Age
- Menopausal variables
- Genes associated with obesity
- Chemotherapy or tamoxifen
- Aromatase inhibitors (% fat and glucose)

Aromatase Inhibitors

Waist circumference



Fasting insulin levels



CONCLUSIONS (so far!)

- **Some group of participants gained weight after diagnosis (compared to background population of healthy women)**
- **Aromatase Inhibitors use seems to contribute to:**
 - **less weight gain after diagnosis**
 - **greater waist circumference at study entry**
 - **higher fasting insulin levels at study entry**
(? prognostic implications)

Limitations

- Small sample size
- Different machines used to record weight
- ? Self-selection bias
- Participants might have tried to lose weight
- Those who gained most weight might have been excluded because of recurrence or death.
- No data on waist circumference, fasting insulin and glucose at diagnosis



NEXT....

Prospective study exploring changes in:

- **Weight and body composition**
 - **Lifestyle: diet and exercise**
 - **Psychological factors: anxiety, depression**
 - **Biological factors associated with body weight regulation such as:**
 - **Leptin**
 - **Insulin**
 - **Ghrelin**
 - **Genes associated with obesity**



Thanks...