Fertility preservation does not delay the initiation of chemotherapy in breast cancer patients

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Structure

- Introduction
- Study objective
- Material and Methods
- Results
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Pregnancy after breast cancer

70 % lower chance of pregnancy after breast cancer, compared to the general population

Causes:

- Gonadotoxic chemotherapy
- Adjuvant hormonal treatment in case of hormone receptor positive tumours
- Fear of relapse during pregnancy
- The possibility to pass on a cancer predisposing mutation

Stensheim et al., Int J Cancer 2011
Peccatori et al., Ann Oncol 2013

Follicle depletion after chemotherapy in breast cancer patients

Antimüllerian hormone (AMH) is a biomarker for the size of the ovarian follicular pool

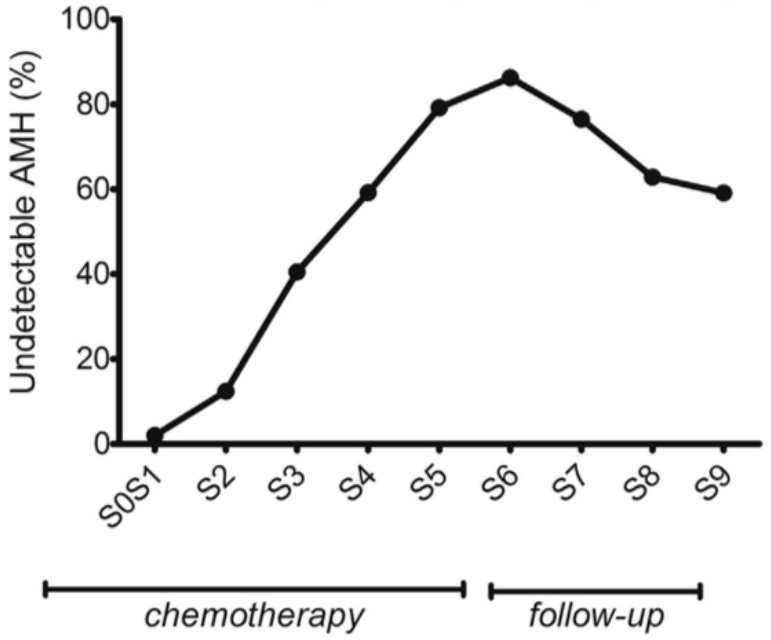


Fig. 4. Proportion of patients with undetectable serum AMH at each visit (%). AMH, anti-Müllerian hormone.

Dezellus et al., Eur J Cancer 2017

Guidelines

Breast cancer, Neo-Adjuvant Chemotherapy (NAC):

< 6 weeks (*Smith et al., 2013*)
< 56 days (*Sanford et al., 2016* (ASCO-meeting))

Breast cancer, Adjuvant Chemotherapy (AC):

< 8 weeks after surgery (*KCE, 2013*)
< 2 to 6 weeks after surgery (*ESMO, 2015)*

Study objective

Do interventions for fertility preservation in women diagnosed with breast cancer delay the initiation of chemotherapy?

Material and Methods

- **Retrospective** cohort study
- Female patients with a new diagnosis of **breast cancer** undergoing **neo-adjuvant (n=29) or adjuvant (n=30) chemotherapy**
- **Selection of adequate 1:1 controls** based on tumour characteristics and oncological treatment

Case group

- ≥18y and ≤40y at diagnosis
- Fertility preservation at CRG between 2012 and 2017
- Referred by Belgian and European oncologists

Control group

- Diagnosed between 2012 and 2016 at age ≥18y
- No fertility preservation consultation or treatment at CRG
- Treated at the Breast Cancer Clinic, UZ Brussel

Results

Neo-adjuvant chemotherapy	Total n=58	Case n=29	Control n=29	p-value (2-sided)
Age (y)				
Mean ± SD	42,9 ± 14,6	31,1 ± 4,0	54,6 ± 11,5	<0,0001[a]
Median ± IQR	37,1 ± 23,3	30,2 ± 6,0	53,1 ± 15,7	
Diagnosis to chemotherapy (d)				
Mean ± SD	28,5 ± 9,2	27,3 ± 9,0	29,6 ± 9,3	0,441[a]
Median ± IQR	28,0 ± 11,0	27,0 ± 14,0	28,0 ± 10,0	
Minimum	14,0	14,0	14,0	
Maximum	62,0	44,0	62,0	

Table 1: Time to chemotherapy in breast cancer patients with neo-adjuvant chemotherapy

[a] = Mann-Whitney U test

Adjuvant chemotherapy	Total n=60	Case n=30	Control n=30	p-value (2-sided)
Age (y)				
Mean ± SD	43,5 ± 15,3	31,6 ± 4,8	55,4 ± 12,7	<0,0001[a]
Median ± IQR	38,6 ± 23,4	31,9 ± 6,7	54,7 ± 18,2	
Diagnosis to surgery (d)				
Mean ± SD	21,0 ± 9,8	18,4 ± 10,8	23,6 ± 8,1	0,020[b]
Median ± IQR	21,0 ± 12,0	16,5 ± 14,0	23,0 ± 8,0	
Minimum	0,0	0,0	4,0	
Maximum	47,0	42,0	47,0	
Surgery to chemotherapy (d)				
Mean ± SD	38,0 ± 14,1	38,8 ± 16,6	37,1 ± 11,4	0,917[b]
Median ± IQR	34,0 ± 15,0	34,5 ± 18,0	33,5 ± 12,0	
Minimum	20,0	20,0	27,0	
Maximum	106,0	106,0	80,0	
Diagnosis to chemotherapy (d)				
Mean ± SD	58,9 ± 16,3	57,2 ± 17,3	60,7 ± 15,3	0,145[b]
Median ± IQR	56,5 ± 17,0	54,5 ± 19,0	59,5 ± 16,0	
Minimum	31,0	36,0	31,0	
Maximum	106,0	106,0	105,0	

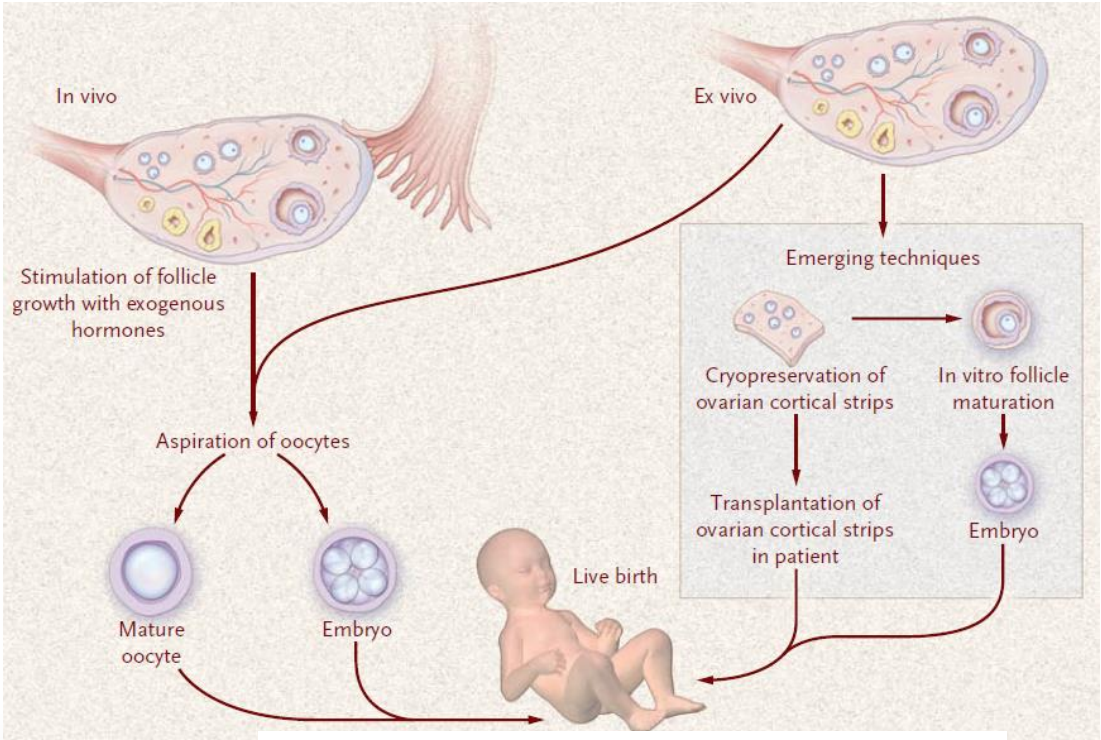
Table 2: Time to chemotherapy in breast cancer patients with adjuvant chemotherapy

[a]= Independent T-test; [b]= Mann-Whitney U test

Results

	Neo-adjuvant Chemotherapy n=29	Adjuvant Chemotherapy n=30
Controlled Ovarian Stimulation (COS)	14 (48,3%)	25 (83,3%)
Ovarian Tissue Cryopreservation (OTCP)	12 (41,4%)	7 (23,3%)
In-Vitro Maturation Oocyte Pick-Up (IVM OPU)	11 (37,9%)	4 (13,3%)
Combination	8 (27,6%)	6 (20,0%)

Table 3: Applied fertility preservation procedures



Jeruss et al., N Engl J Med 2009

Results

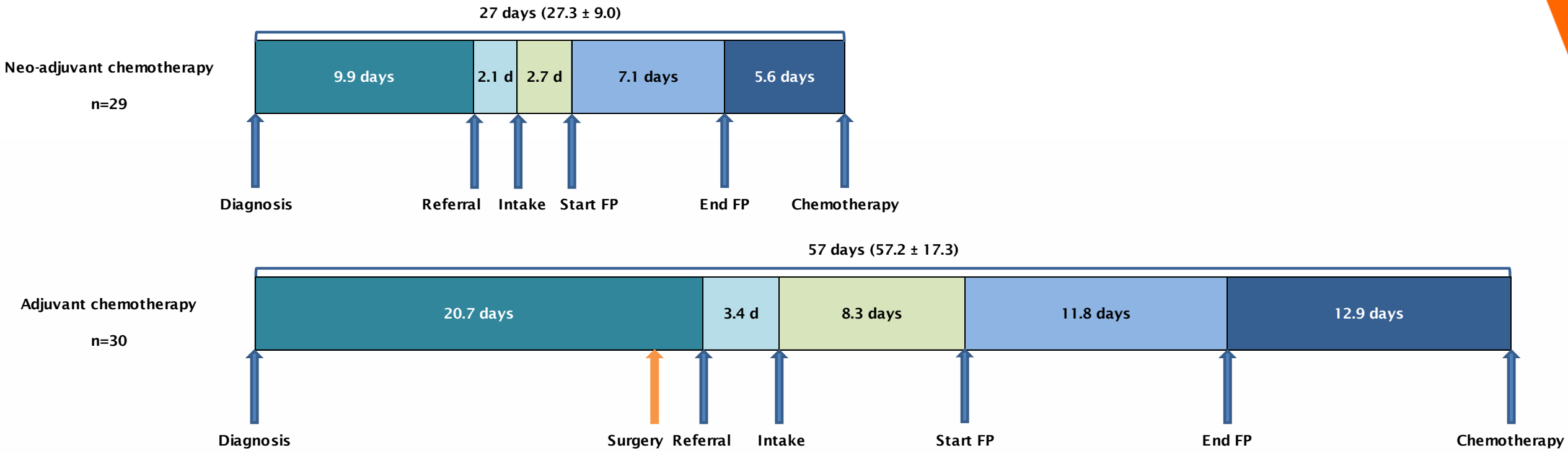


Figure 1: Timelines of fertility preservation program in case patients
Mean of each time interval is presented, mean ± SD is presented for the entire time frame. Values are expressed in days.
Diagnosis = moment of biopsy
Diagnosis to surgery (adjuvant chemotherapy): 18.4 ± 10.8 days

Discussion

Time from diagnosis to chemotherapy: **no significant difference!**

Neo-adjuvant chemotherapy	Diagnosis to chemotherapy	
	Case (days)	Control (days)
Presented study	27.3	29.6
Guidelines		
Smith et al., 2013	< 6 weeks	
Sanford et al., 2016 (ASCO-meeting)	< 56 days	
Literature		
Chien et al., 2017	39.8	40.9
Letourneau et al., 2017	38.1	39.4

Table 4: Time interval between diagnosis and initiation of neo-adjuvant chemotherapy: our results compared to guidelines and literature
Maximum interval is presented in the guidelines, mean interval is presented in the literature.

Adjuvant chemotherapy	Diagnosis to chemotherapy		Surgery to chemotherapy	
	Case (days)	Control (days)	Case (days)	Control (days)
Presented study	57.2	60.7	38.8	37.1
Guidelines				
KCE, 2013	/		< 8 weeks	
ESMO, 2015	/		< 2 to 6 weeks	
Literature				
Madrigrano et al., 2007	87.0	/	46.8	/
Baynosa et al., 2009	71.0	67.0	30.0	29.0

Table 5: Time intervals between diagnosis and initiation of adjuvant chemotherapy: our results compared to guidelines and literature
Maximum interval is presented in the guidelines, mean interval is presented in the literature.

Discussion

Limitations and recommendations

- Retrospective design
  - Collecting data and selection bias
- Single centered study
- Limited population size
  - Extrapolation of results?
- Decision-making process unknown
- Controls were a different age group

Data to be confirmed in larger series

Oncological and reproductive outcomes are more important outcome parameters

Conclusion

Take home messages

Fertility preservation **does not significantly delay** the initiation of chemotherapy in breast cancer patients.

Inform your patient and refer as soon as possible.
As soon as there is a chance that the patient will have chemotherapy.

Thank you

Questions?

THINKING MUST NEVER SUBMIT ITSELF.

www.oncofertility.be