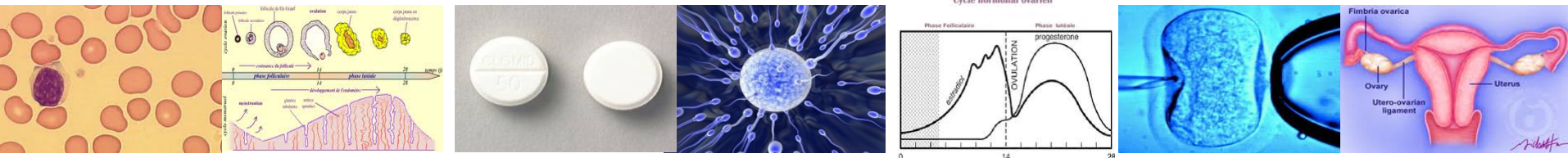


Use of fertility treatments and childhood acute leukaemia The ESCALE study (SFCE)

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Objectives

To investigate the association between **acute leukemia (AL)** and:

- **Fertility treatments**

Few studies on AL

- Petridou 2012: positive association between ALL & IVF
- Three previous studies suggest a positive association with hormonal treatment

All AL: Roman 1997 - OR = 2.7 [0.6-6.9]

Schuz 1999 - OR = 1.6 [1.0-2.5]

ALL: Puumala 2010 - OR = 1.4 [0.6-3.2]

- **Difficulty of becoming pregnant**

Methods

⇒ data from the French national **case-control study ESCALE**

- **764** AL cases and **1,681** contemporaneous population controls ≤ 15 y
- **Telephone interview** of biological mothers (≈ 35 mn)
 - **Difficulty of becoming pregnant**: taking more than a year to conceive the index child and/or the need to consult a doctor and/or undergo fertility treatment for the index pregnancy.
 - If so : **IVF / AI / Drugs for inducing / stimulating ovulation ?**

Results

	Co n=1,681	ALL N=648	OR	95%CI
Difficulty of becoming pregnant				
No	1,488	540	1.0	-
Yes	193	108	1.7	[1.3-2.2]***
Fertility treatment				
No	111	55	1.5	[1.0-2.1]*
Yes	82	53	1.9	[1.3-2.8]***
Type of treatment				
In vitro fertilization (IVF)	22	8	1.0	[0.4-2.2]
Artificial insemination (AI)	9	6	1.3	[0.5-3.9]
Ovulation induction (without IVF or AI)	41	33	2.6	[1.6-4.3]***

* : $p < 0.05$; *** : $p < 0.001$

Adjustment for age, sex, maternal age at child's birth, parental profession

ALL: acute lymphoblastic leukemia

Discussion

- Association 1) with ovulation induction only and not with IVF or AI ;
2) difficulty of becoming pregnant without using fertility treatment

■ Cases and controls selection

- Cases identified by French National Registry of Childhood HM
- High participation rates
- Controls similar to the French population (French National Perinatal Surveys) according to fertility treatment

	Perinatal surveys		ESCALE controls
	1998	2003	1998-2003
Fertility treatment for the index pregnancy			
Any	5.7%	4.9%	5.5%
<i>In vitro</i> fertilization (IVF)	1.4%	1.7%	1.6%
Artificial insemination (AI)	0.7%	0.8%	0.8%
Ovulation induction (without IVF or AI)	3.5%	2.4%	2.3%

Discussion

- Association 1) with ovulation induction only and not with IVF or AI ;
2) difficulty of becoming pregnant without using fertility treatment
- The **type of drugs** and/or the **underlying causes of infertility** may contribute to accounting for the differences observed between the fertility treatments:
 - Anti-oestrogens (clomiphene) ?
First-line therapy for anovulation/oligo-ovulation
Ross 2003 (infant leukemia): OR = 0.4 [0.1-1.8]
Brinton 2004 (15 AL+ 4 lymphomas): RR = 1.8 [0.6-4.8])
 - Ovulation problems ?
(IVF: gonadotropins, GnRH analogs)

Conclusion

- The results suggest that **subfertility in itself** and **ovulation induction**, but **not *in vitro* fertilization**, may be associated with AL
- The link with the various **types of fertility drugs** and the underlying causes of infertility now needs to be investigated further.

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