



Contributions of Hormonal Cytology to Reproductive Health in Girls and Adolescents

An ancient technique for monitoring contemporary problems

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Introduction

Hormonal cytology developed during the 20th century.

It describes **cyclic changes in vaginal cells in animals and humans during the menstrual cycle**

The pathology of **reproductive health** focuses frequently on **sexually transmitted diseases** and their prevention.

However, even in subpopulations with minimal risk, we deal with significant **disorders having a potential impact on future fertility.**



George Papanicolaou, M.D.
13.5.1883 – 19.2. 1962



George L. Wied
M.D., D.Sc.(hon), F.I.A.C.
7.2. 1921- 25.7. 2004

Material and methods

- 2006-2015 6688 vaginal fornix cytologies
- 2350 patients investigated
- A more detailed analysis:
 - **three-year period from 2013-2015**
 - **452 patients**
 - many of them investigated several times, and
 - monitored for a period longer than the three years analysed.
 - Most patients were children, while a small part were adult women.

Patients investigated with hormonal cytology in the years 2013-2015 (n = 452).

- ❖ Central disorders: hypopituitarism; inborn growth disorders, malformations
- ❖ Peripheral gonadal disorders, inborn metabolic disorders
- ❖ Ovarian cysts
- ❖ Hyperandrogenic syndrome
- ❖ Autoimmune disorders: DM I, m. Crohn, thyroiditis, celiakia
- ❖ Pubertas praecox: thelarche praecox, early menarche
- ❖ Late menarche
- ❖ Dysfunctional juvenile metrorrhagia
- ❖ Eating disorders: Anorexia mentalis, bulimia, psychiatric disorders
- ❖ Obesity
- ❖ Excessive sport activity
- ❖ Secondary oligomenorrhea
- ❖ Dysmenorrhea NOS

Illustrative cases

- ❖ Central disorders: hypopituitarism; inborn growth disorders, malformations
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27 years. Hypopituitarism. Born in Ukraine.

Homozygot - PROP1-related combined pituitary hormone deficiency.

March 2013, first visit.

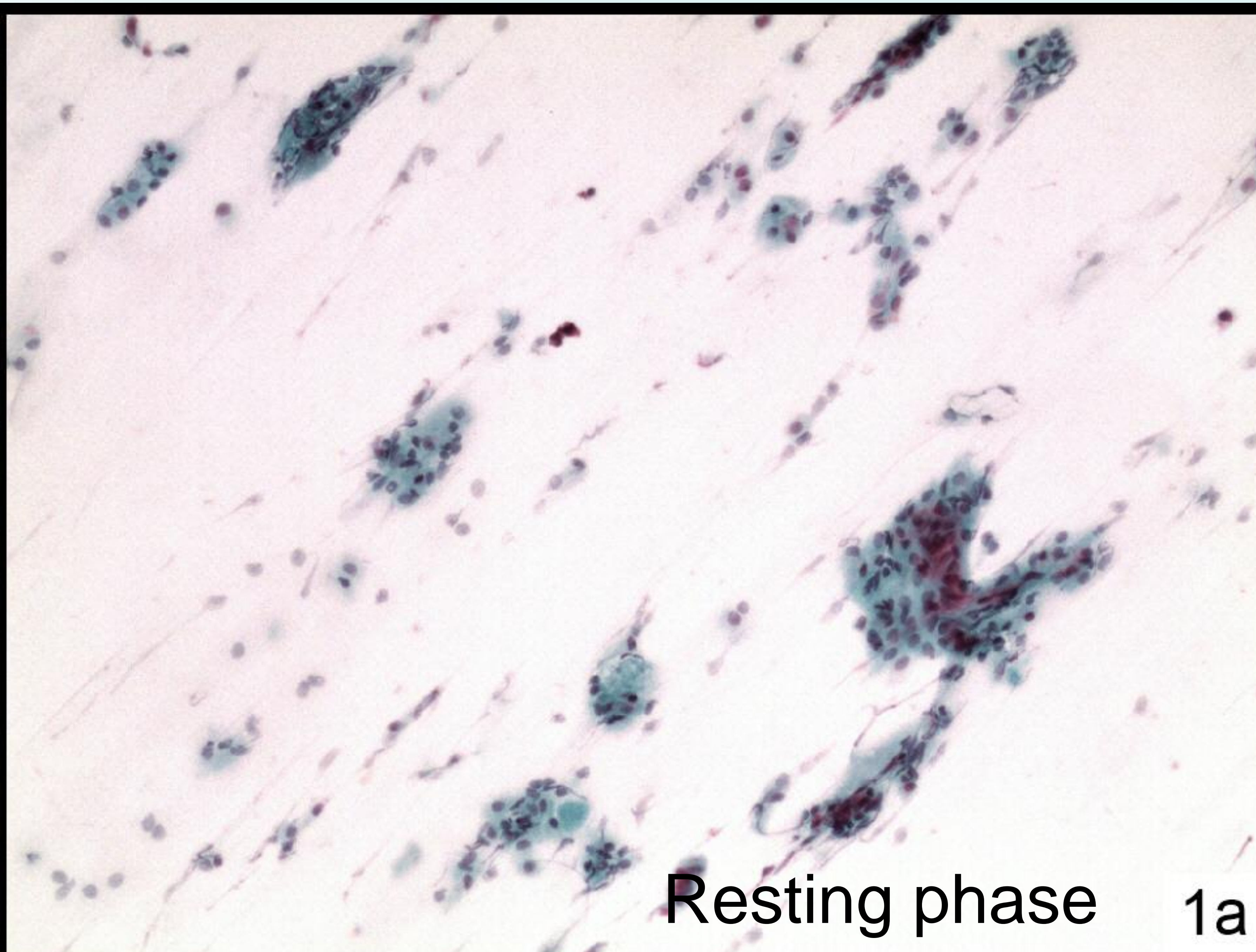
Primary amenorrhea.

Habitus of a child (149cm, 42kg).

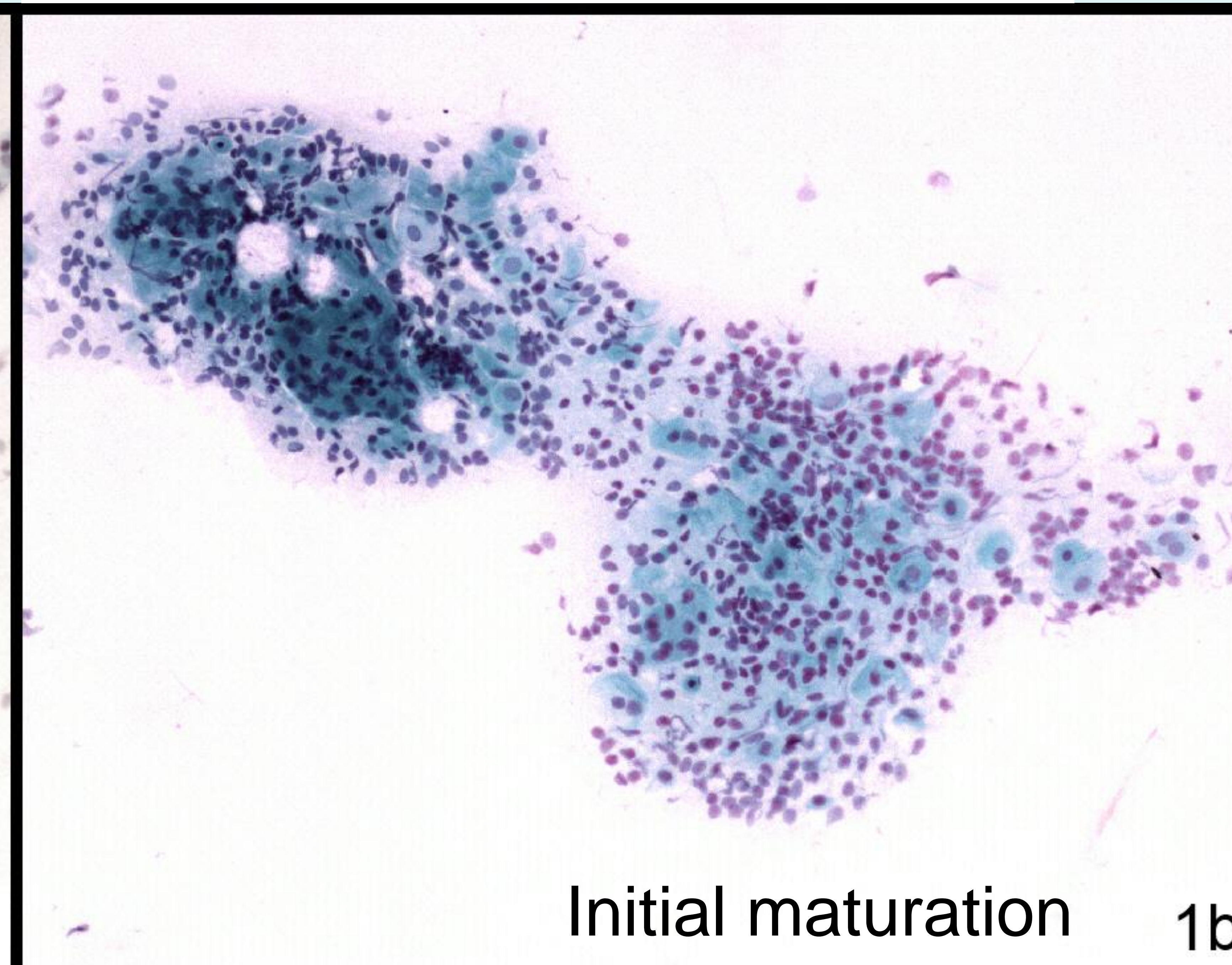
March 2014. *Miniestrogenisation started. Humatrope inj.; Hydrocortisone, Euthyrox, Caltrate*

27 years

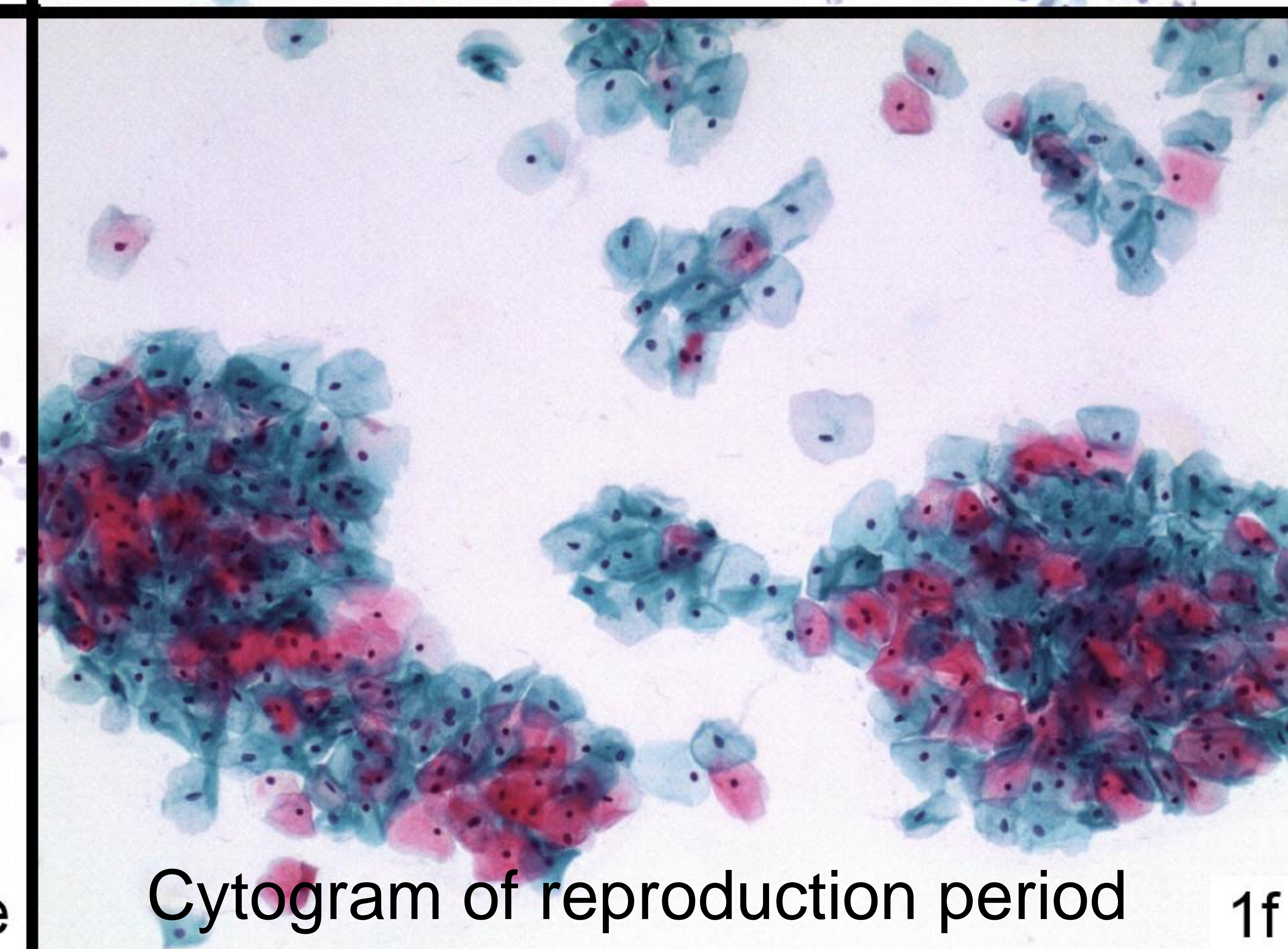
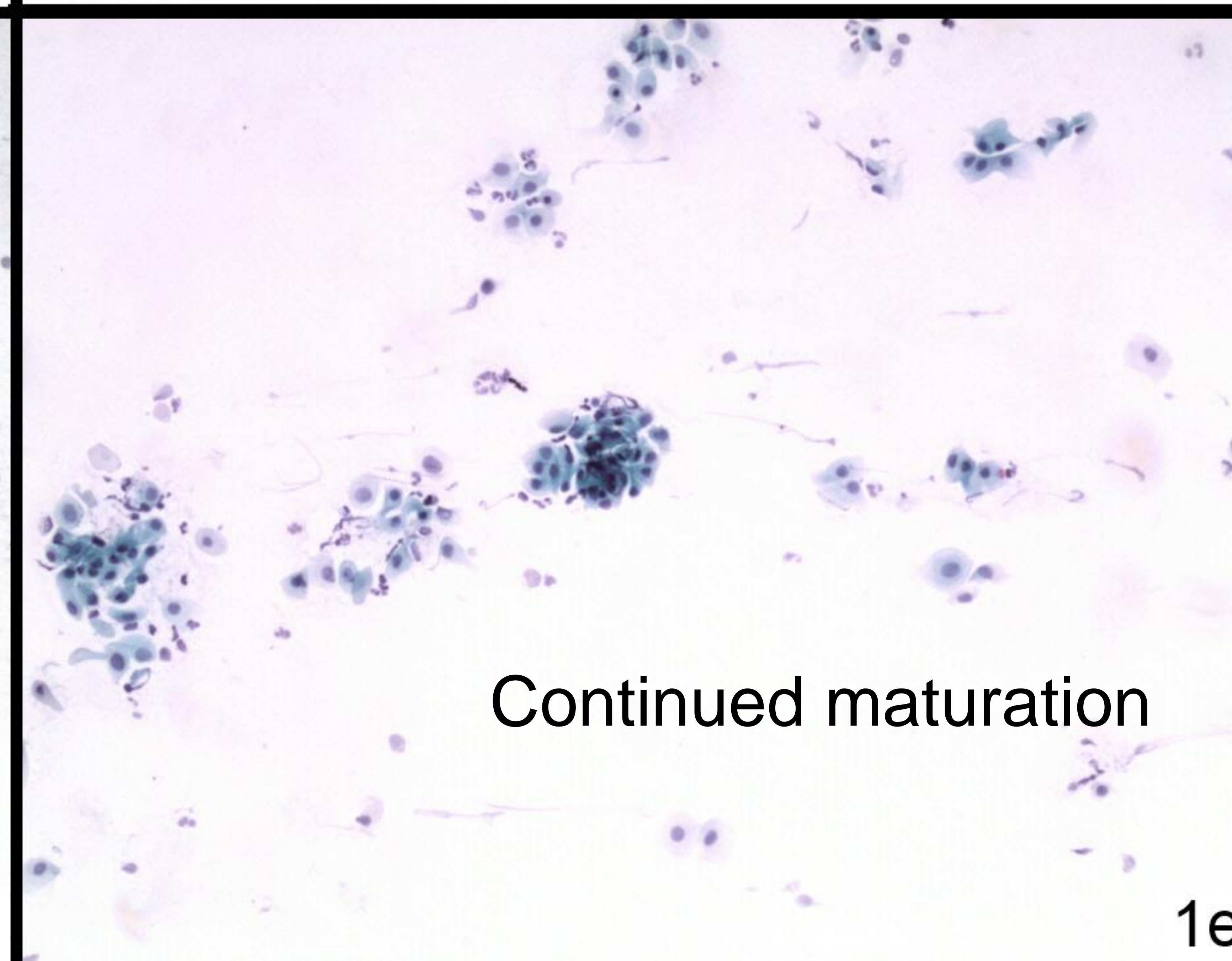
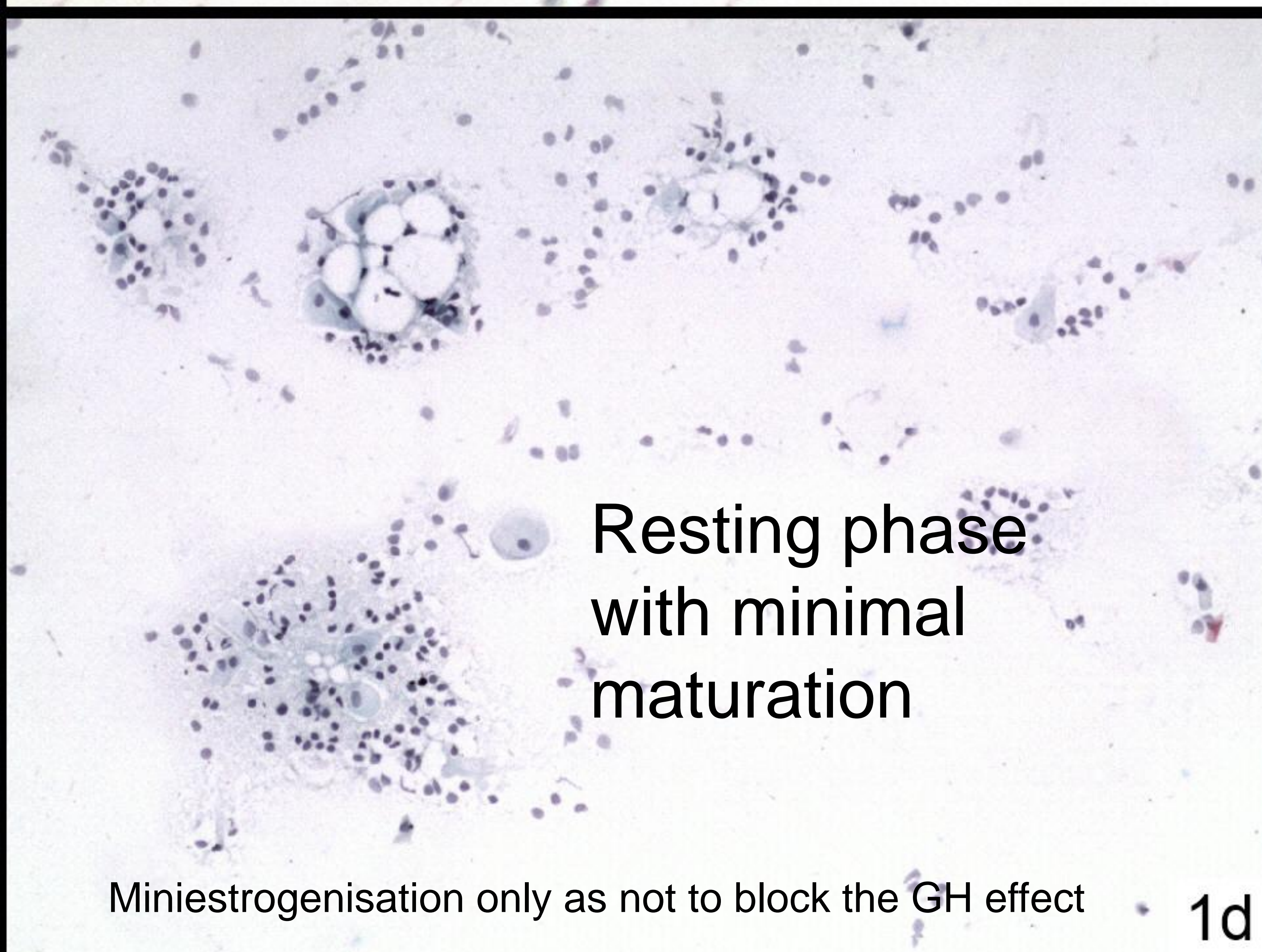
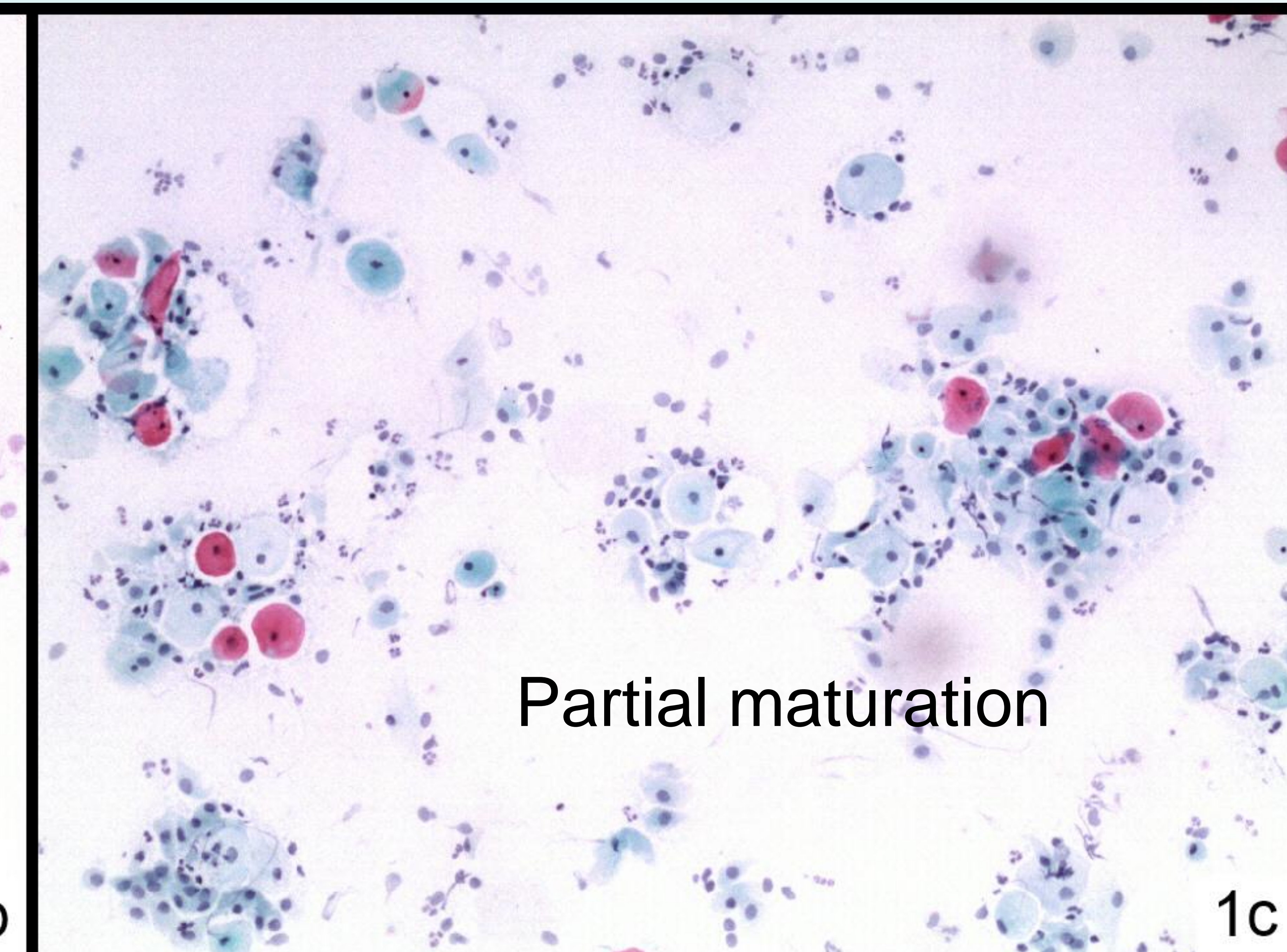
March 2013: 149 cm, 42 kg



May 2014: 154 cm, 43,2 kg



August 2014: 156 cm, 45 kg



October 2014. 158 cm, 46 kg.

April 2015. 160 cm, 50 kg.

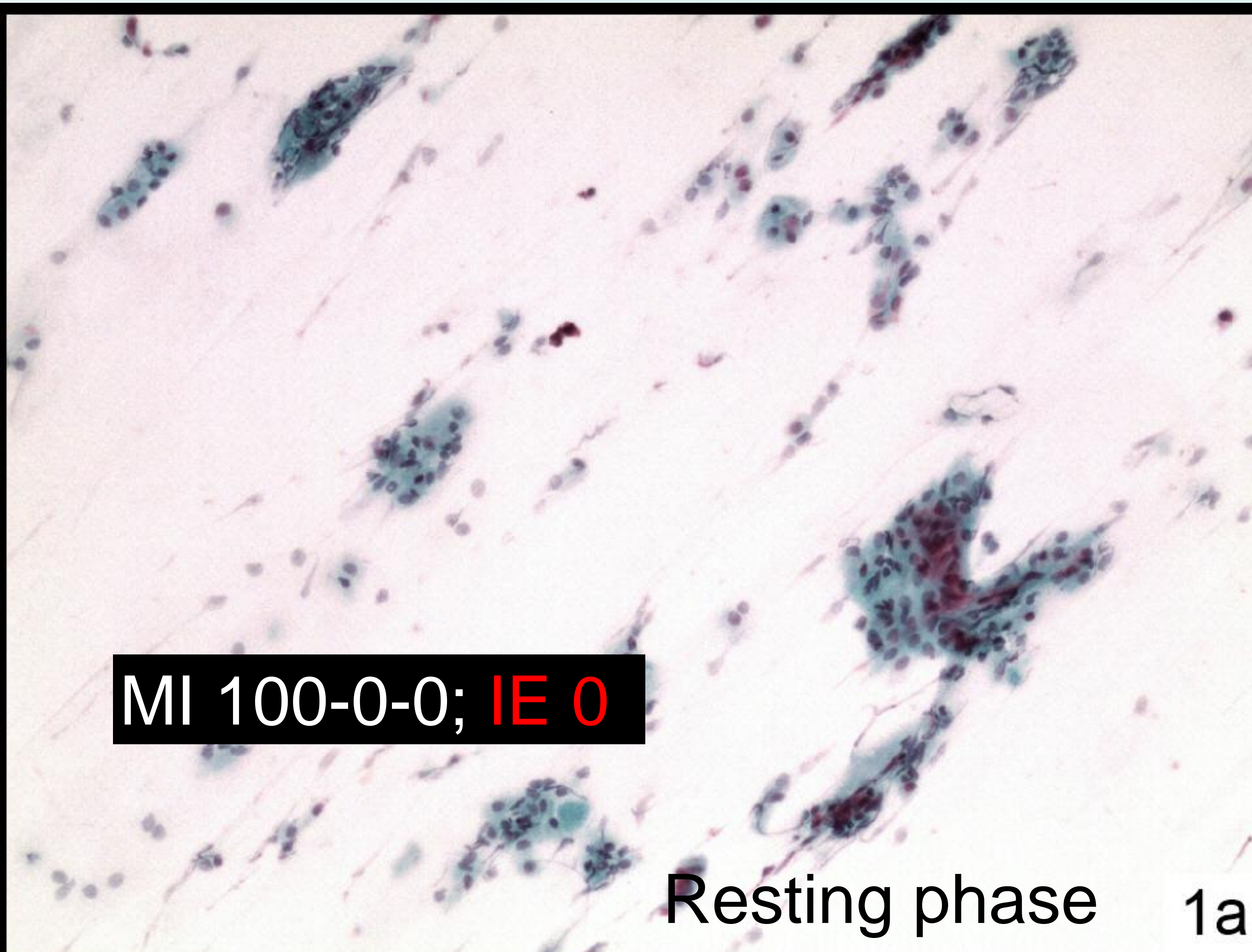
May 2015. 162 cm, 51,2 kg.

Thoughtful multidisciplinary two-year substitution process resulted into normalization of stature, female habitus and menarche at 30 years of age.

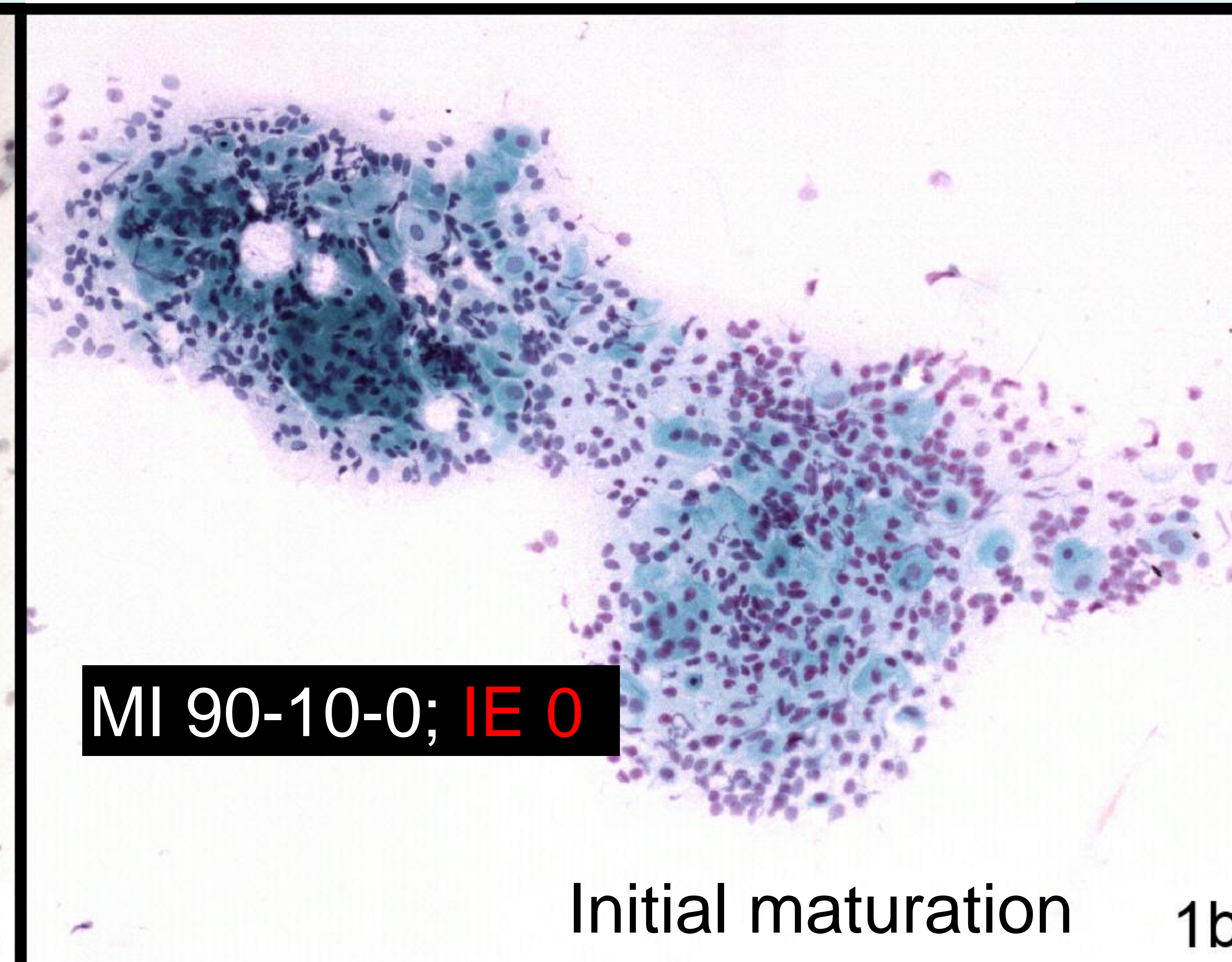
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27 years

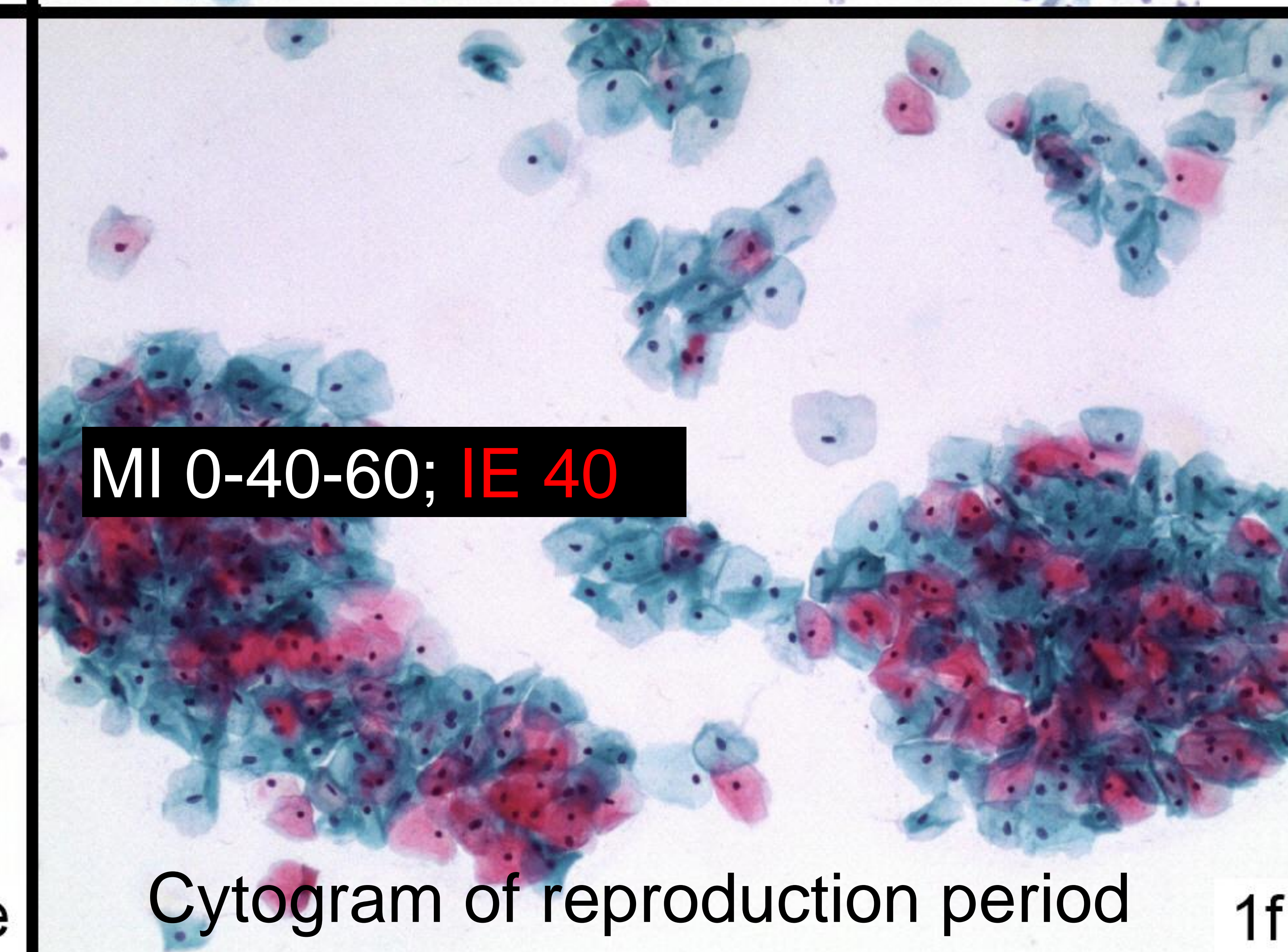
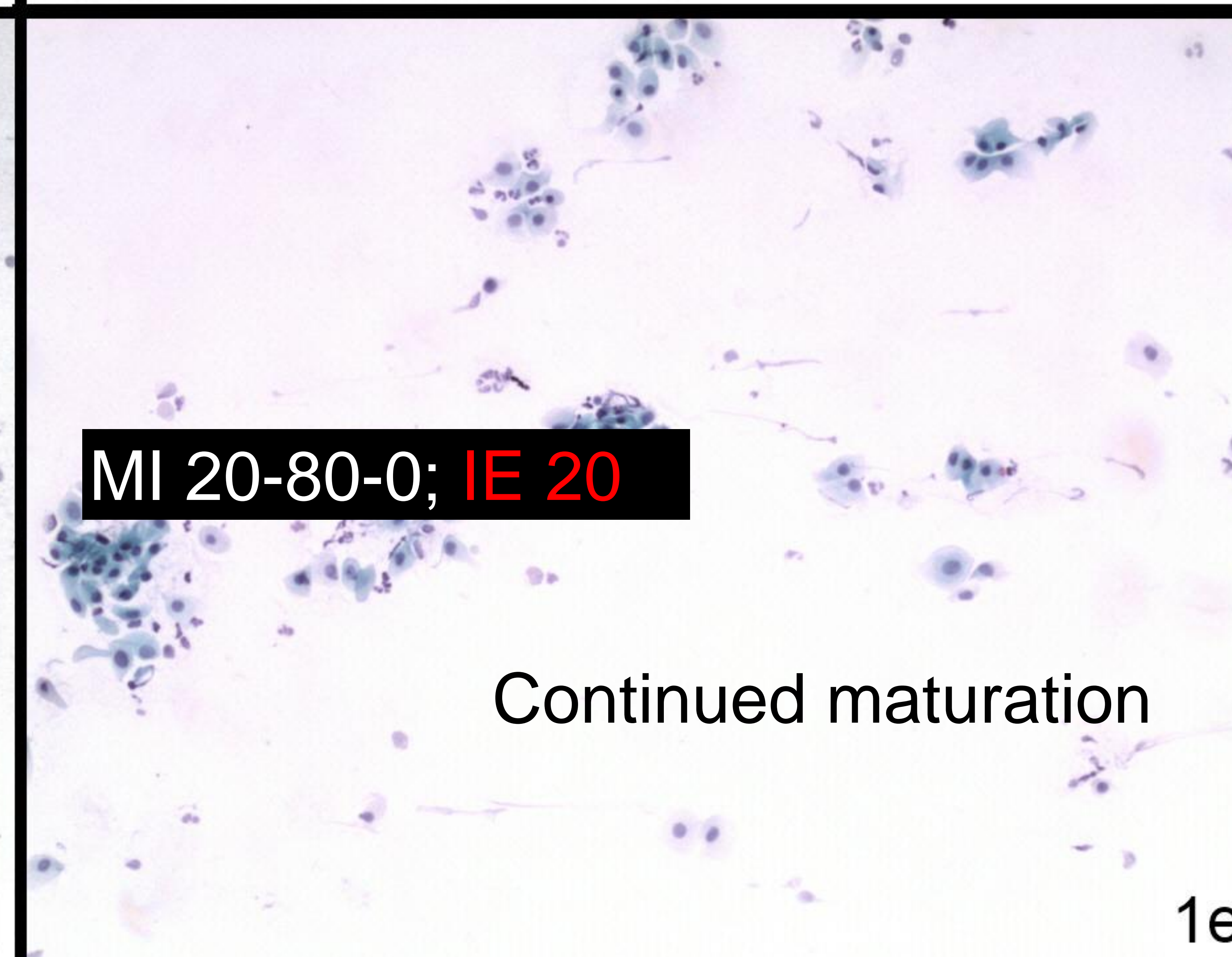
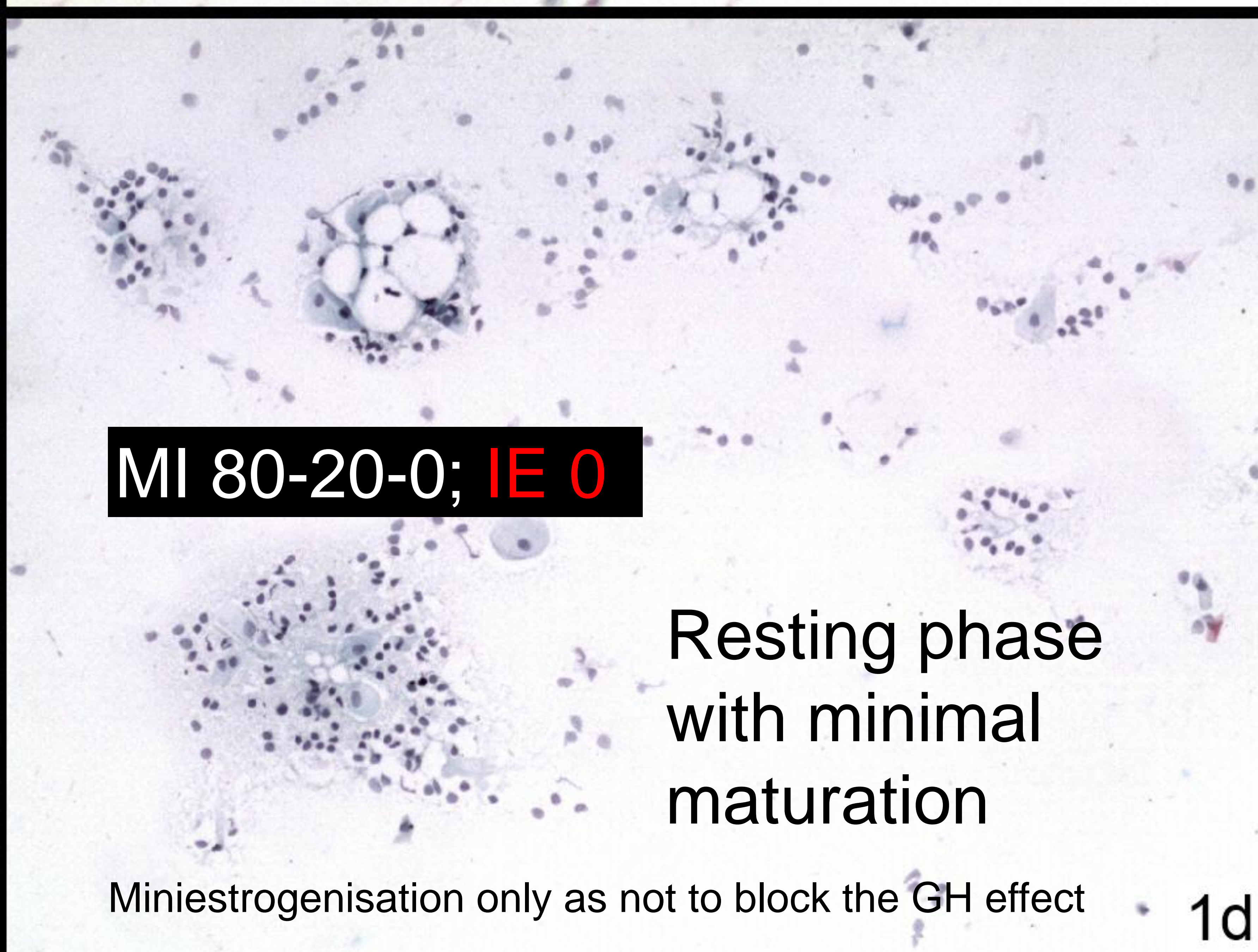
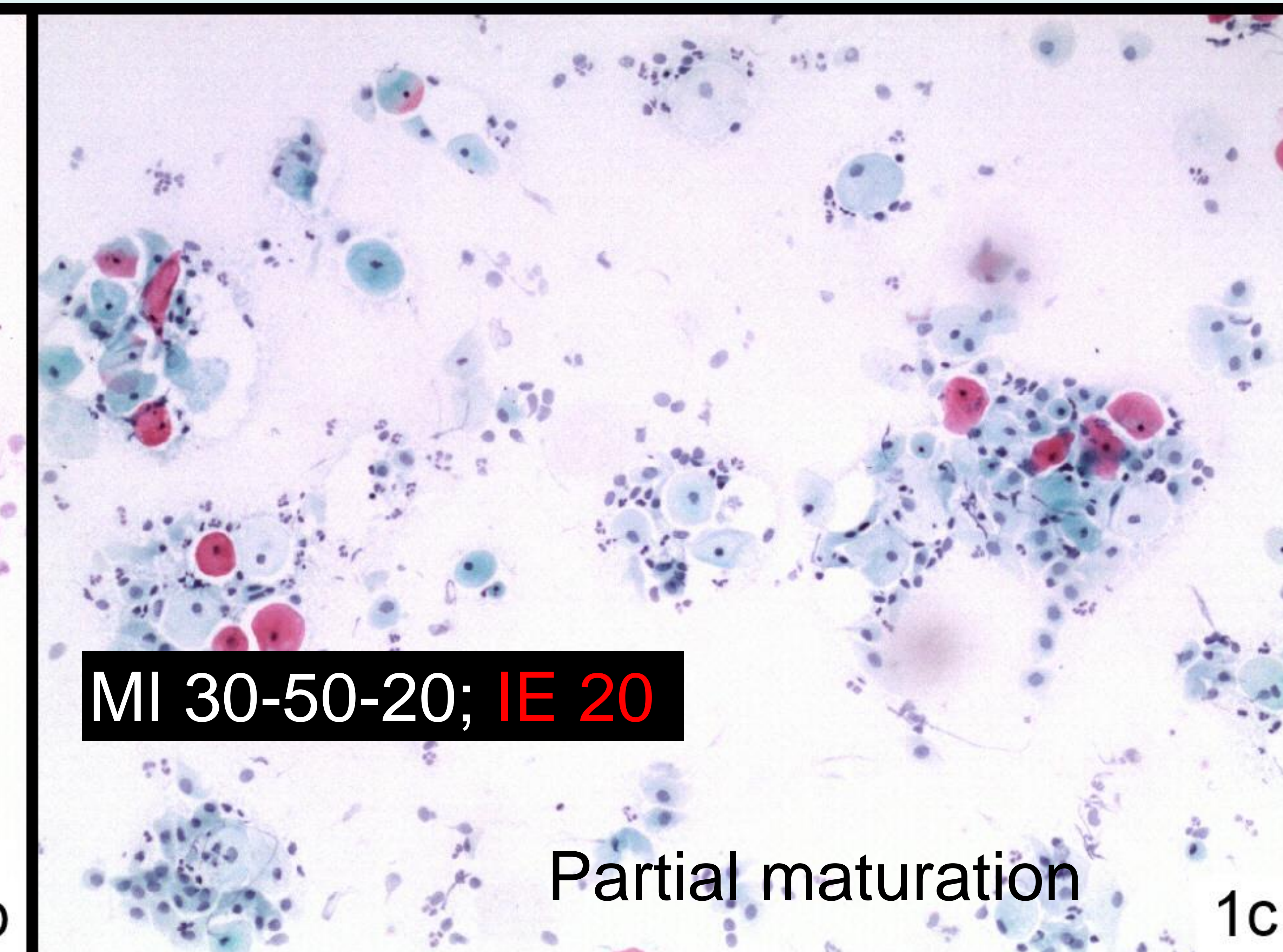
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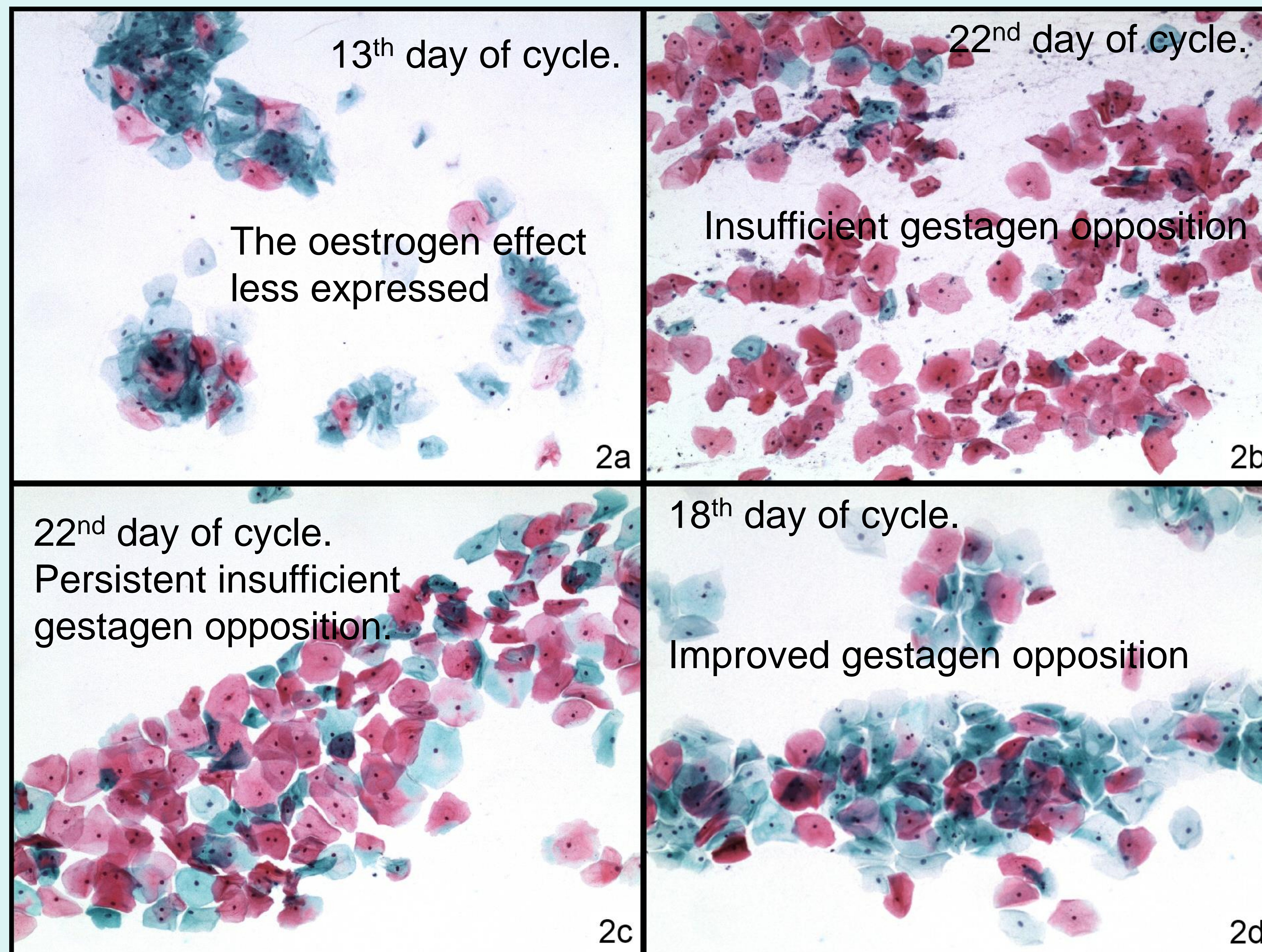
16 years. 158 cm. 47 kg. Crohn's disease.

Treated since 2010, when she was 14.
Juvenile metrorrhagia. Anaemia.
Gestagen administration. Continuing
Duphaston therapy.

16 years.

Juvenile metrorrhagia. Anaemia. Gestagen administration.
Continuing Duphaston therapy.

February 2013.
Duphaston
stopped end
2013



April 2014.

June 2014.

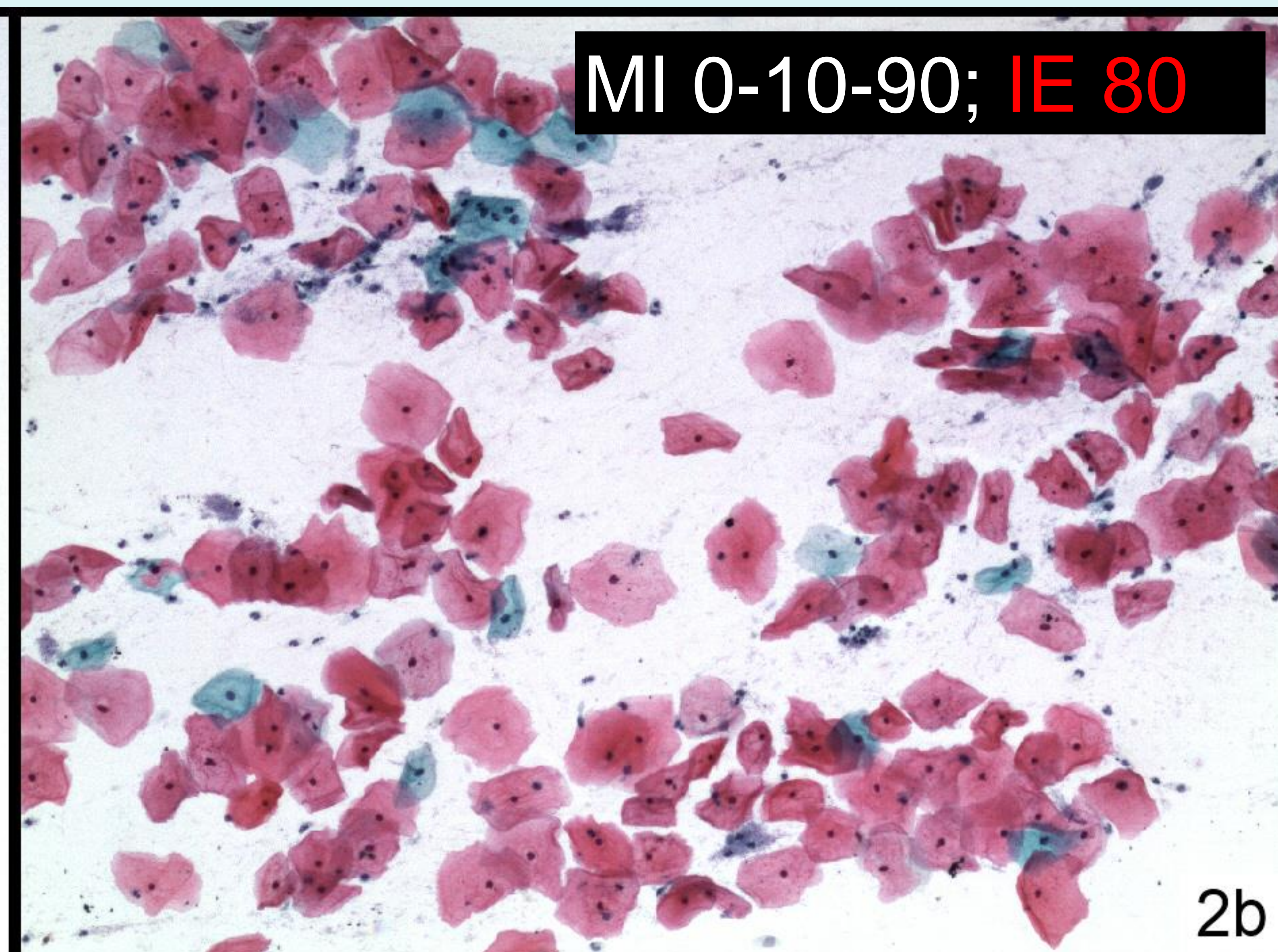
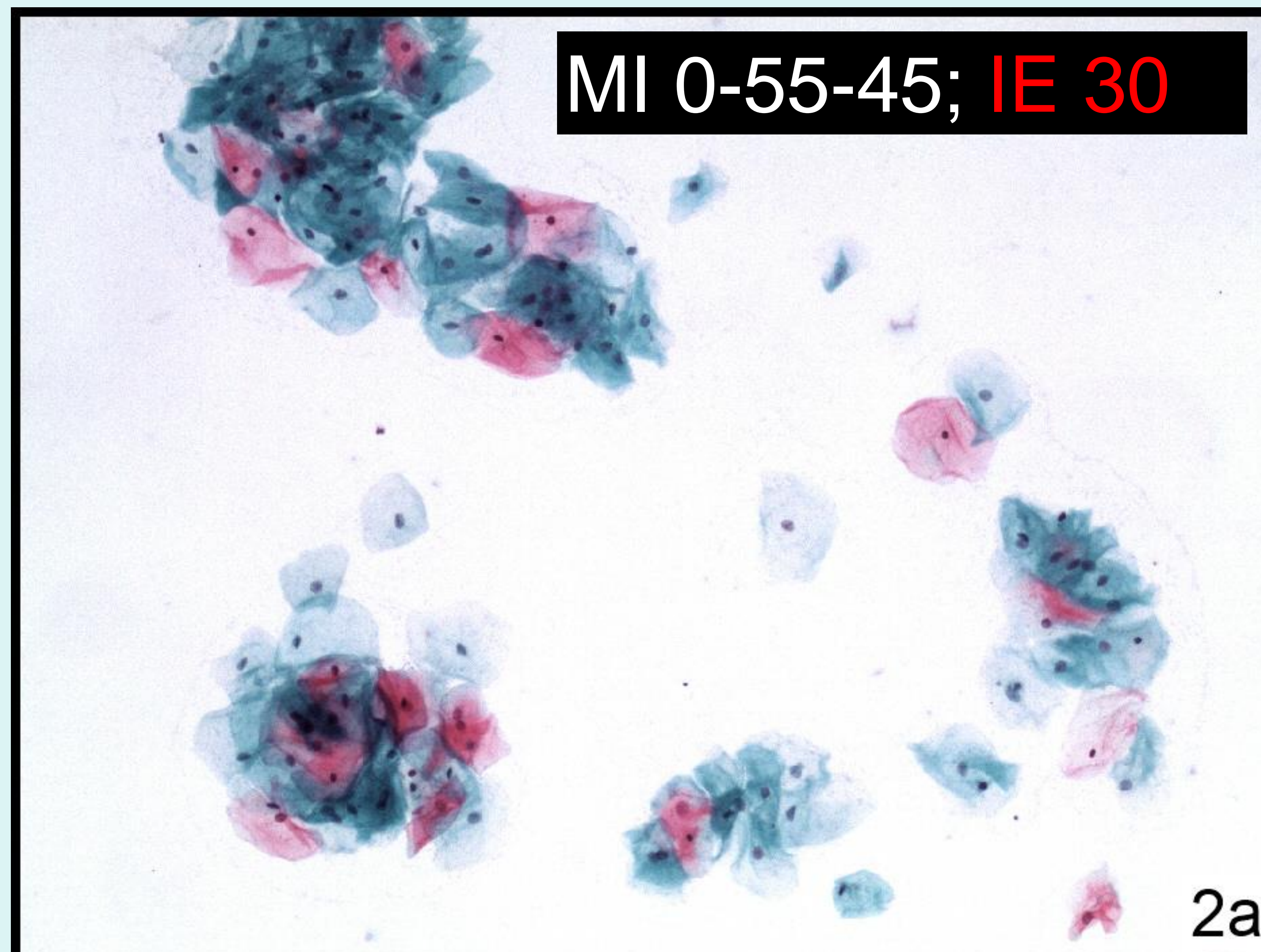
October 2014.

March, May, and August 2015. Coitarche. Herpes genitalis. Sinusitis. Severe form of ileitis terminalis (m. Crohn) diagnosed in July 2015. Allergies to pollen, dust, Augmentin.
Duphaston administration continued. HCs: persistent partial lack of gestagen opposition. 2016. Continues to be followed up.

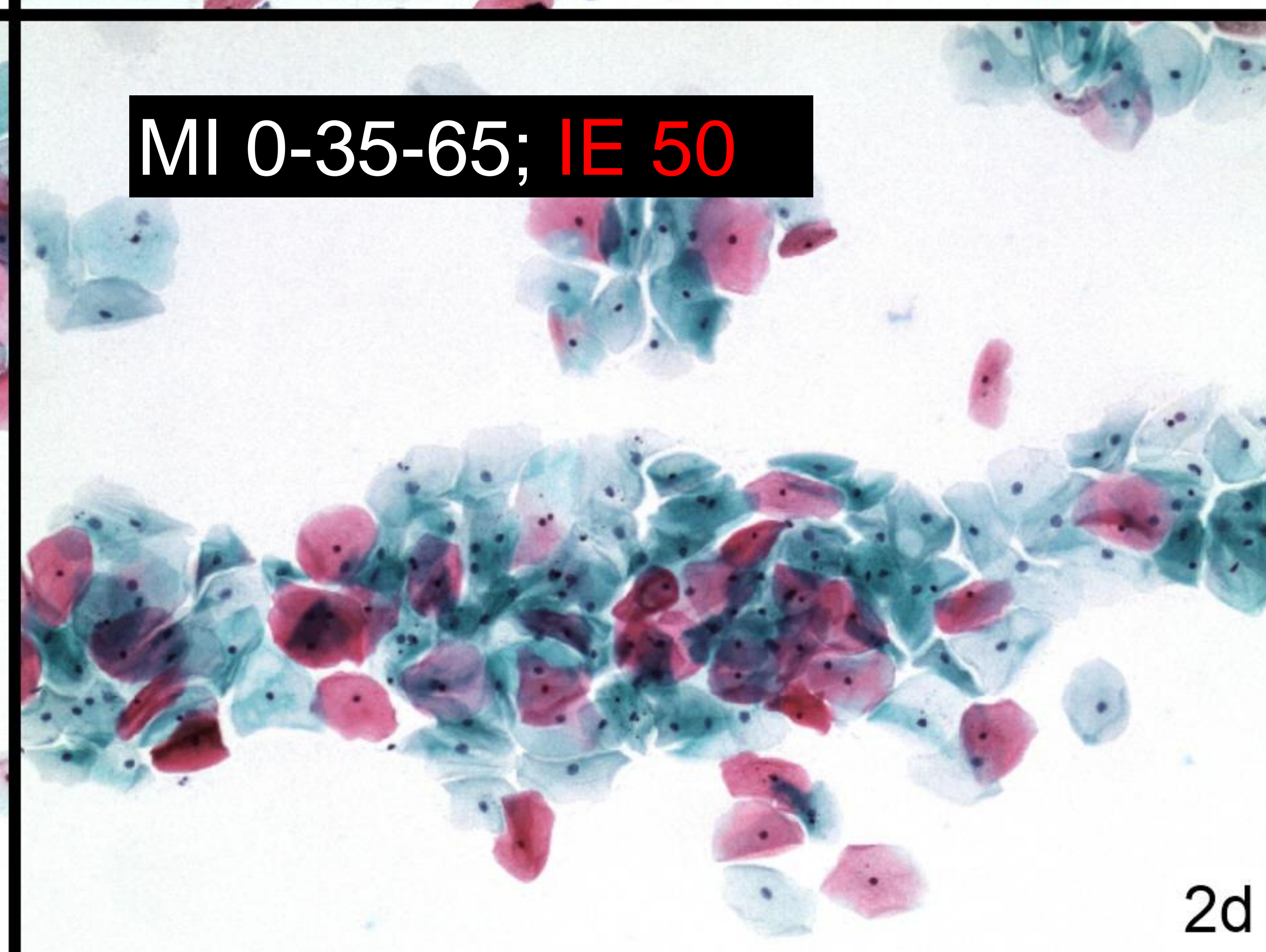
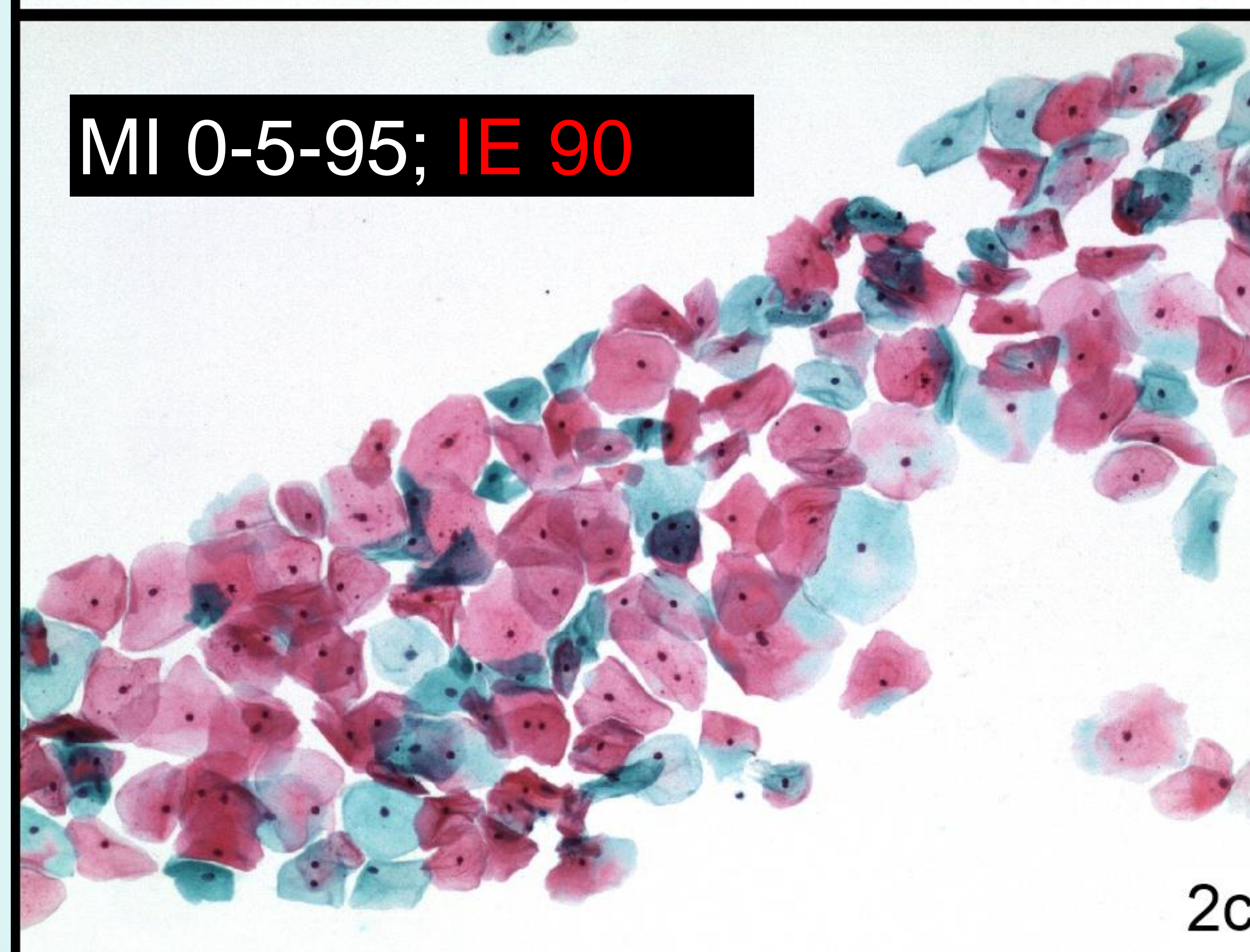
16 years.

Juvenile metrorrhagia. Anaemia. Gestagen administration.
Continuing Duphaston therapy.

February 2013.
13th day of cycle.
The oestrogen
effect less
expressed
Duphaston
stopped end
2013



June 2014.
22nd day of cycle.
Persistent
insufficient
gestagen
opposition.



April 2014.
22nd day of cycle.
Insufficient
gestagen
opposition

October 2014.
18th day of cycle.
Improved
gestagen
opposition

March, May, and August 2015. Coitarche. Herpes genitalis. Sinusitis. Severe form of ileitis terminalis (m. Crohn) diagnosed in July 2015. Allergies to pollen, dust, Augmentin.
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1year 7months. Thelarche praecox

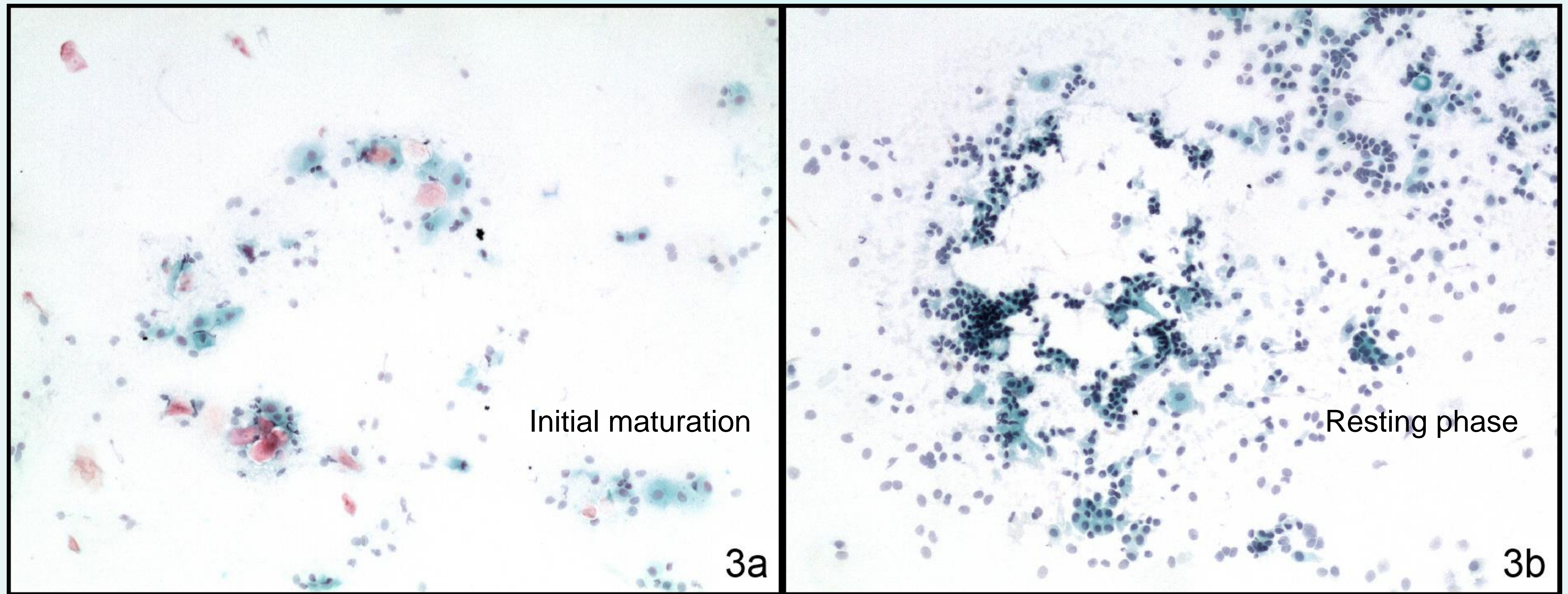
December 2012. First visit. Thelarche since birth.

Fastened bone age – 3.5 years.

1 year 7 months December 2012. First visit. Thelarche since birth.

April 2013. Persistent thelarche. Fastened bone age.

April 2014. Persistent thelarche. Fastened bone age.



1 year 11 months. Bone age 3,5 years.

2 years 11 months. Bone age 4 years.

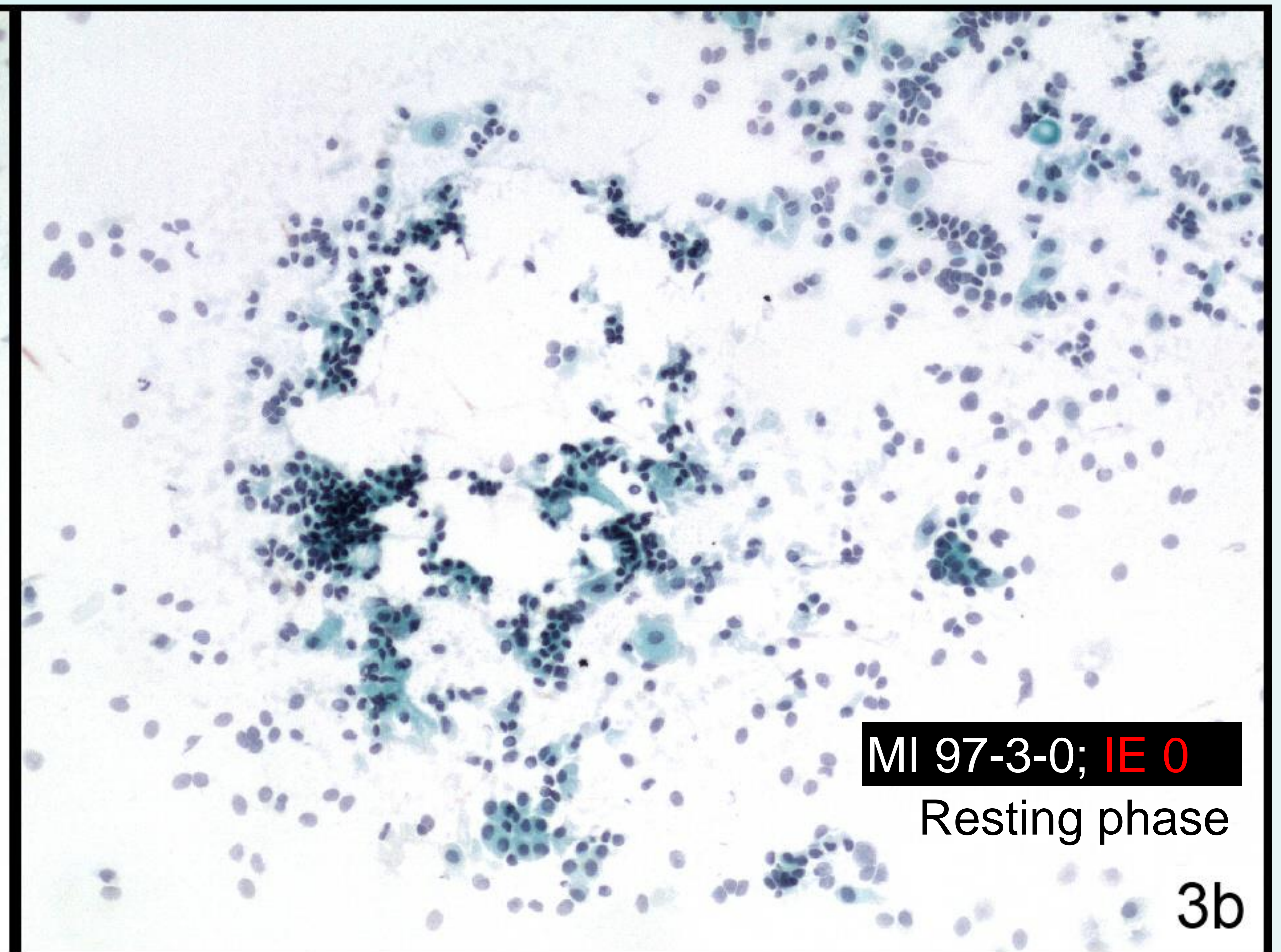
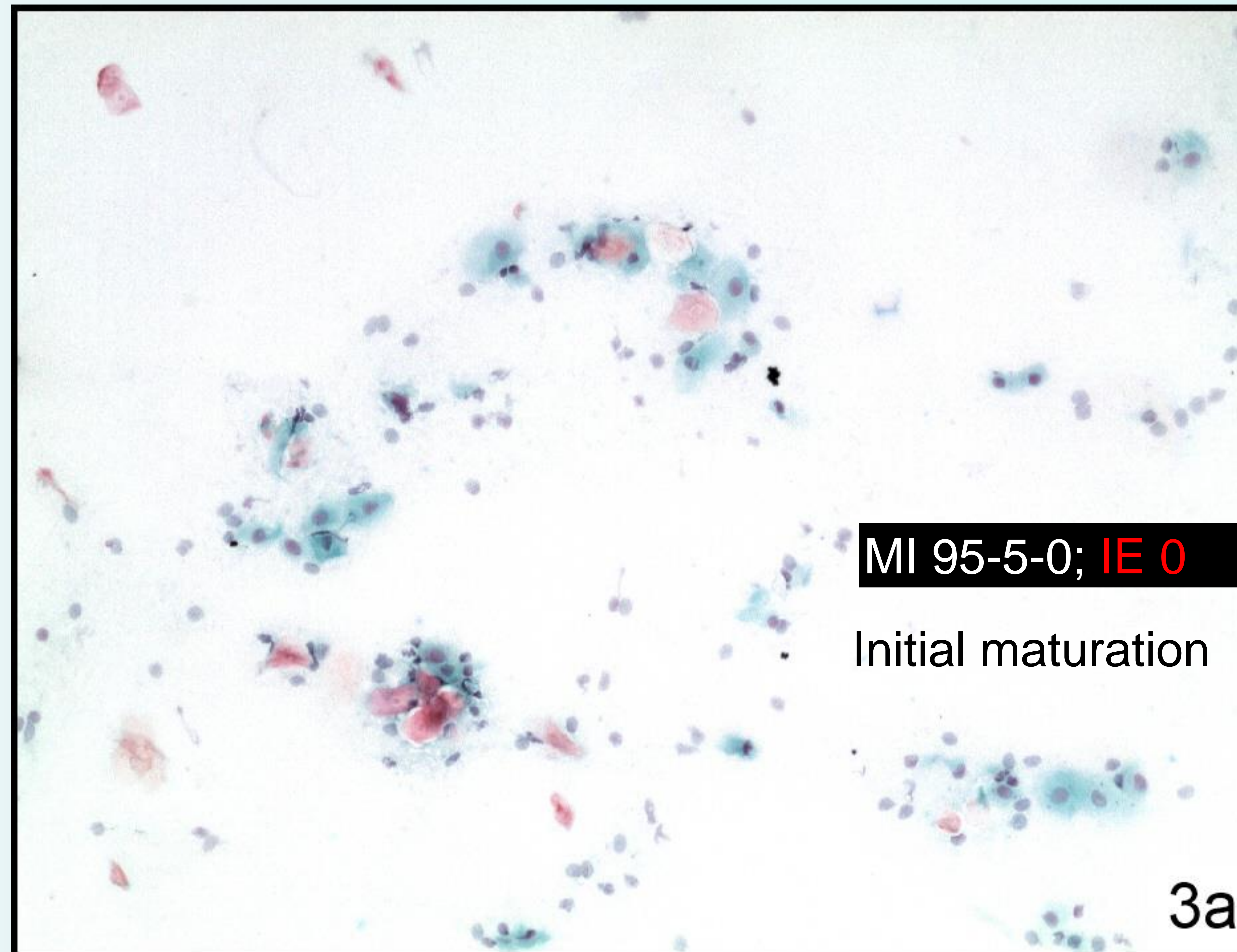
February 2016. 4 years 9 months. 106 cm. 18.4 kg. Thelarche fully regressed.

By using hormonal cytology minimal signs of maturation were detected.
With conservative approach, dietary measures and observation they regressed to cytogram of child resting phase.

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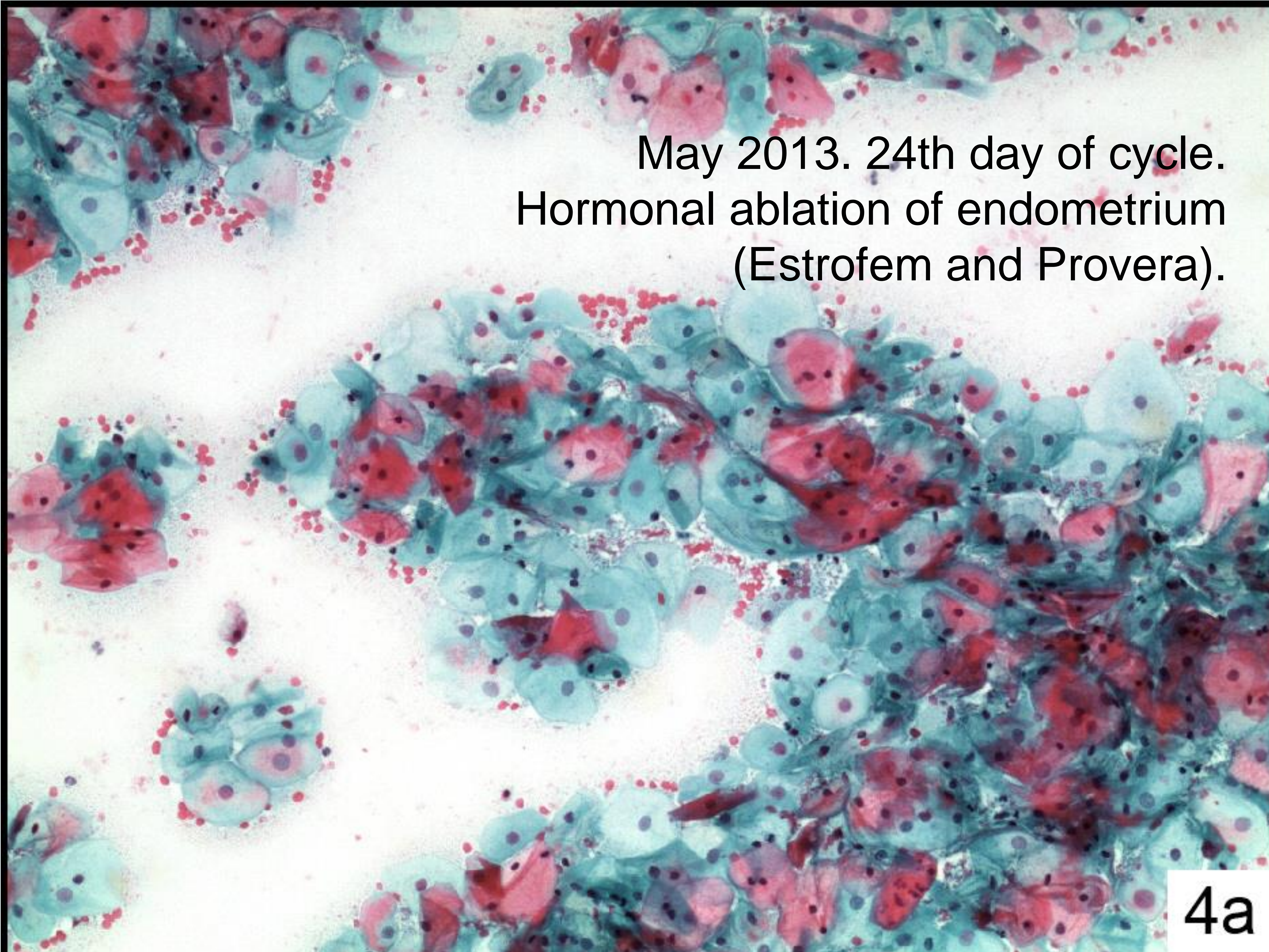
11 years, 6 months. 156 cm, 50 kg.

Early menarche. Polymenorrhea.

May 2013. First visit.

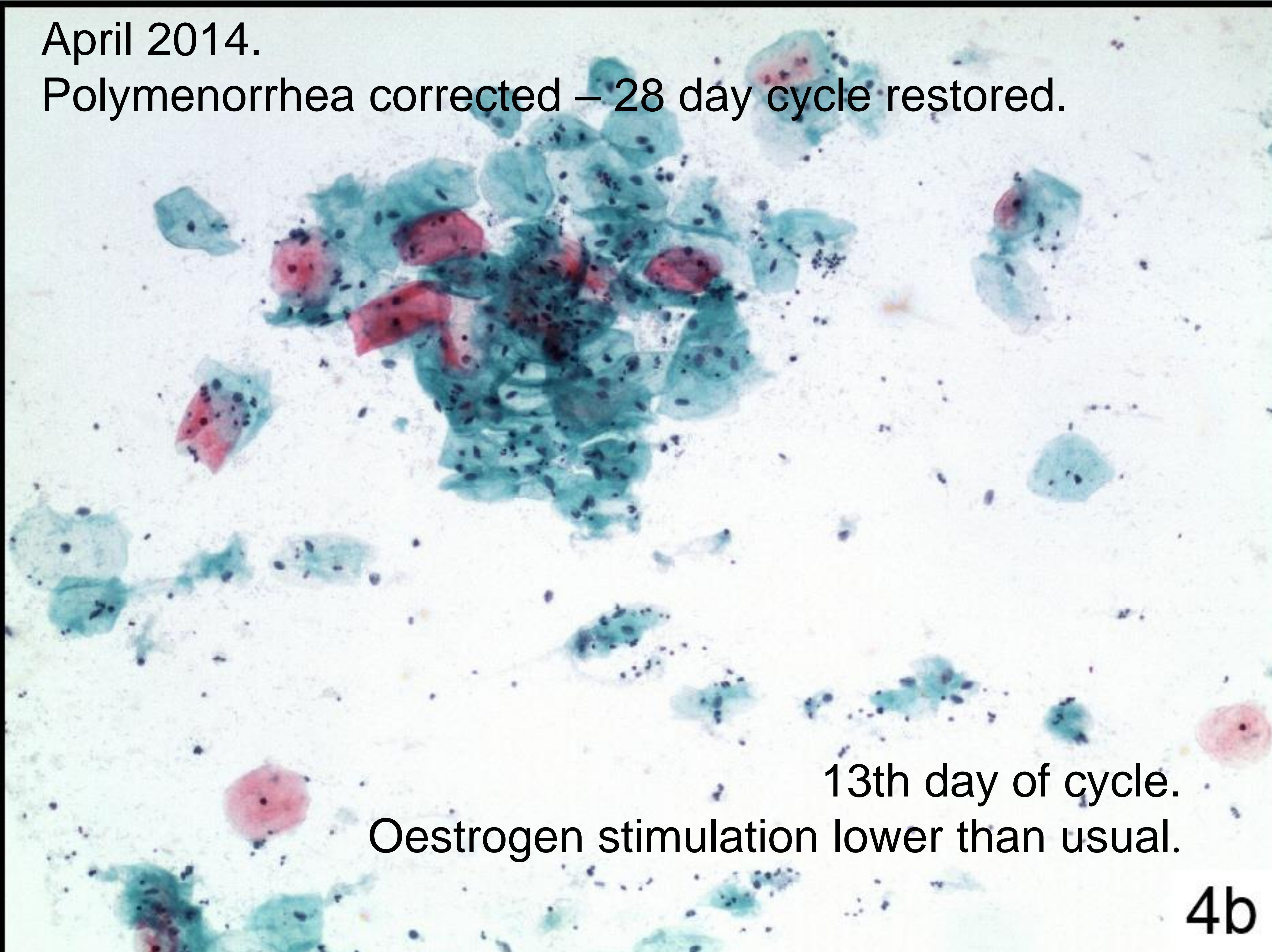
Menarche 2012.

Frequent irregular cycle 14-20 days.



May 2013. 24th day of cycle.
Hormonal ablation of endometrium
(Estrofem and Provera).

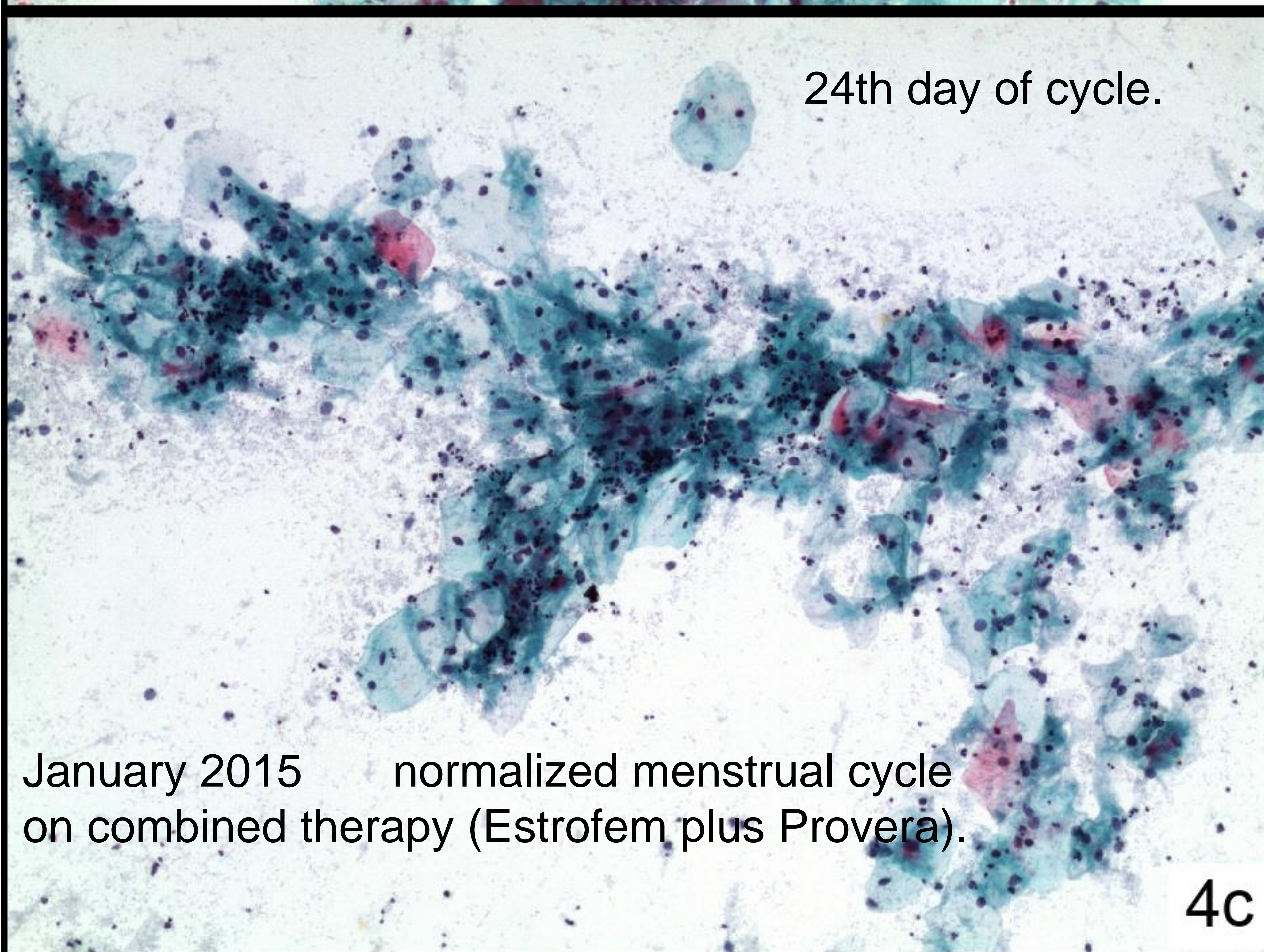
4a



April 2014.
Polymenorrhea corrected – 28 day cycle restored.

13th day of cycle.
Oestrogen stimulation lower than usual.

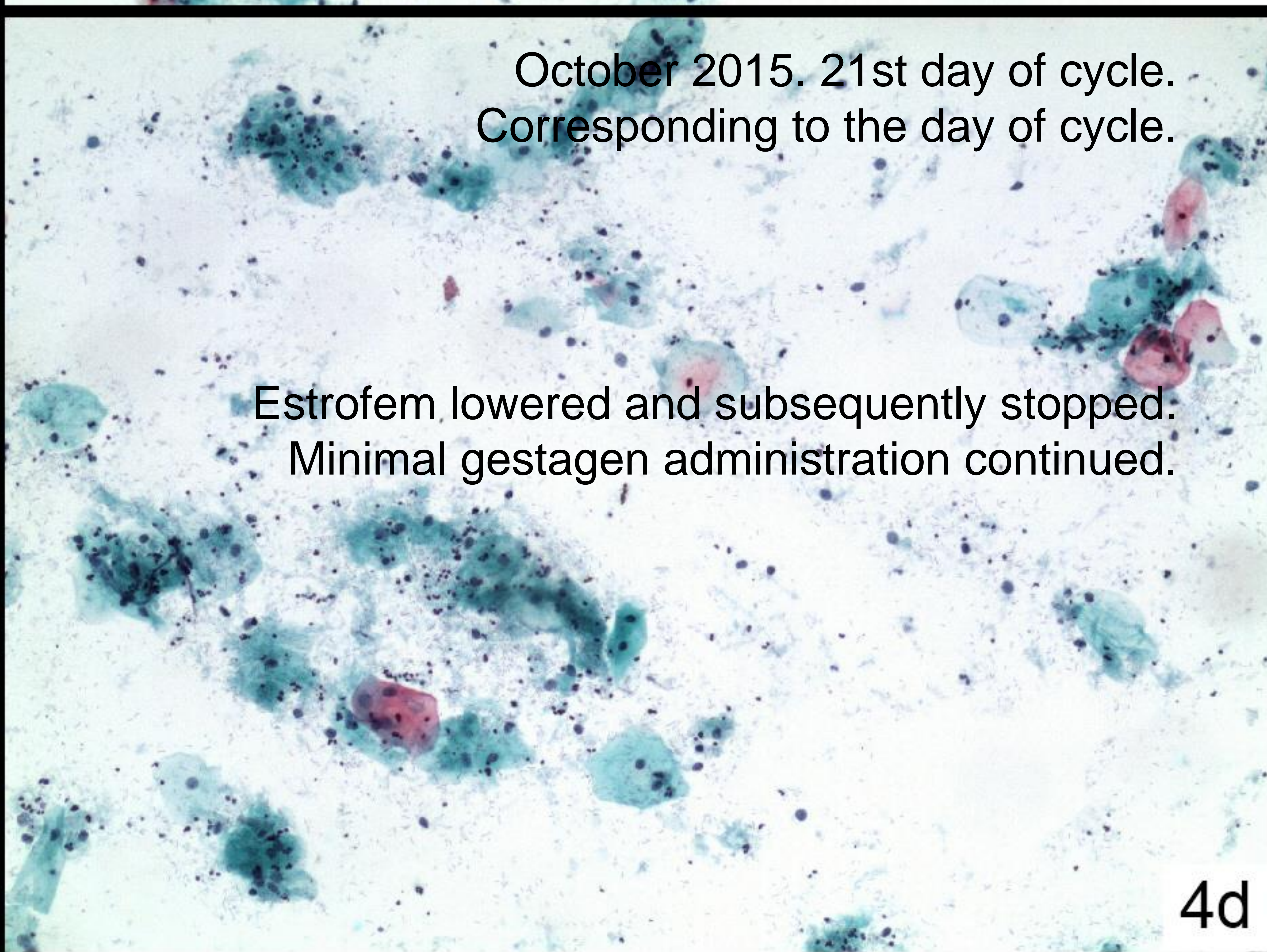
4b



24th day of cycle.

January 2015 normalized menstrual cycle
on combined therapy (Estrofem plus Provera).

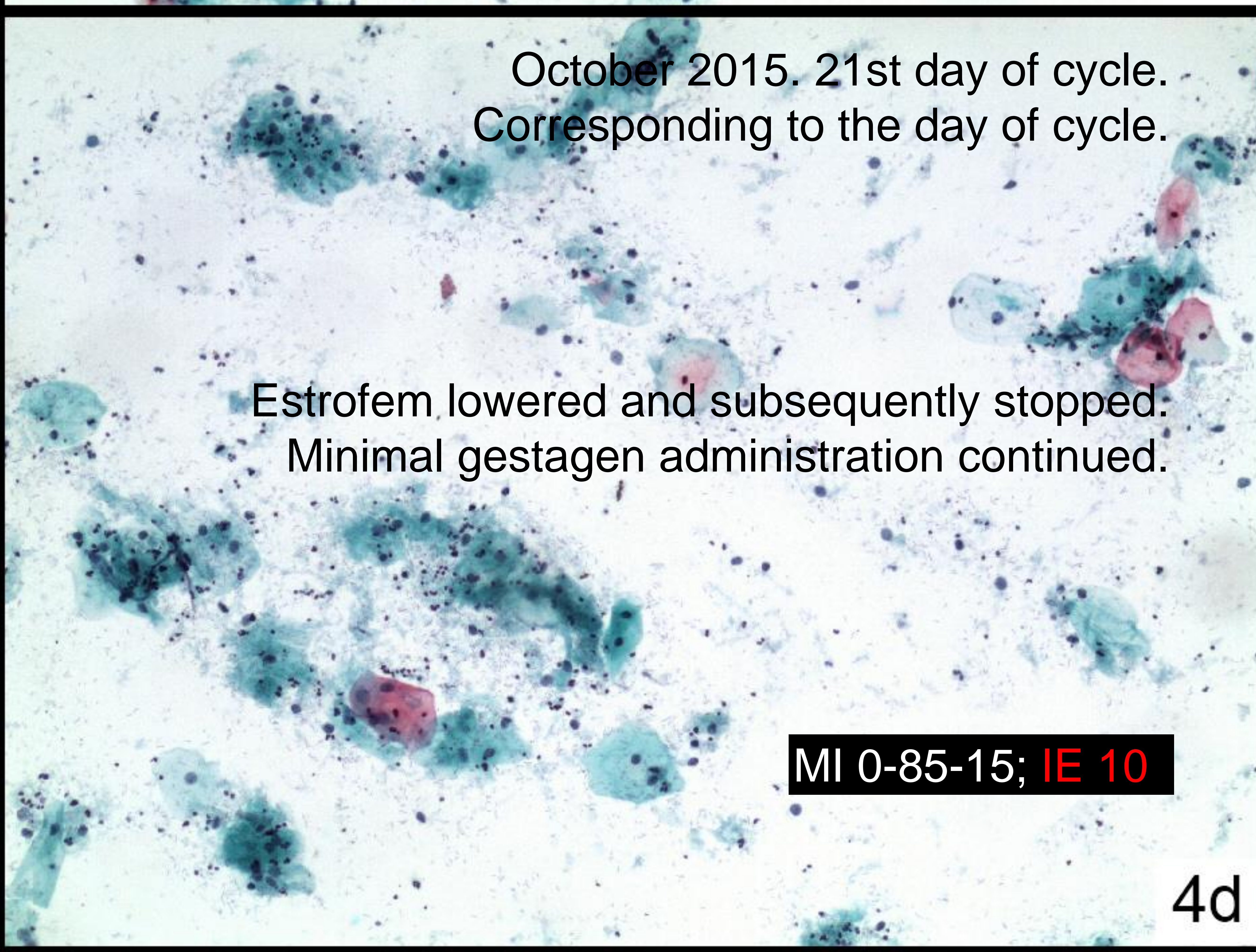
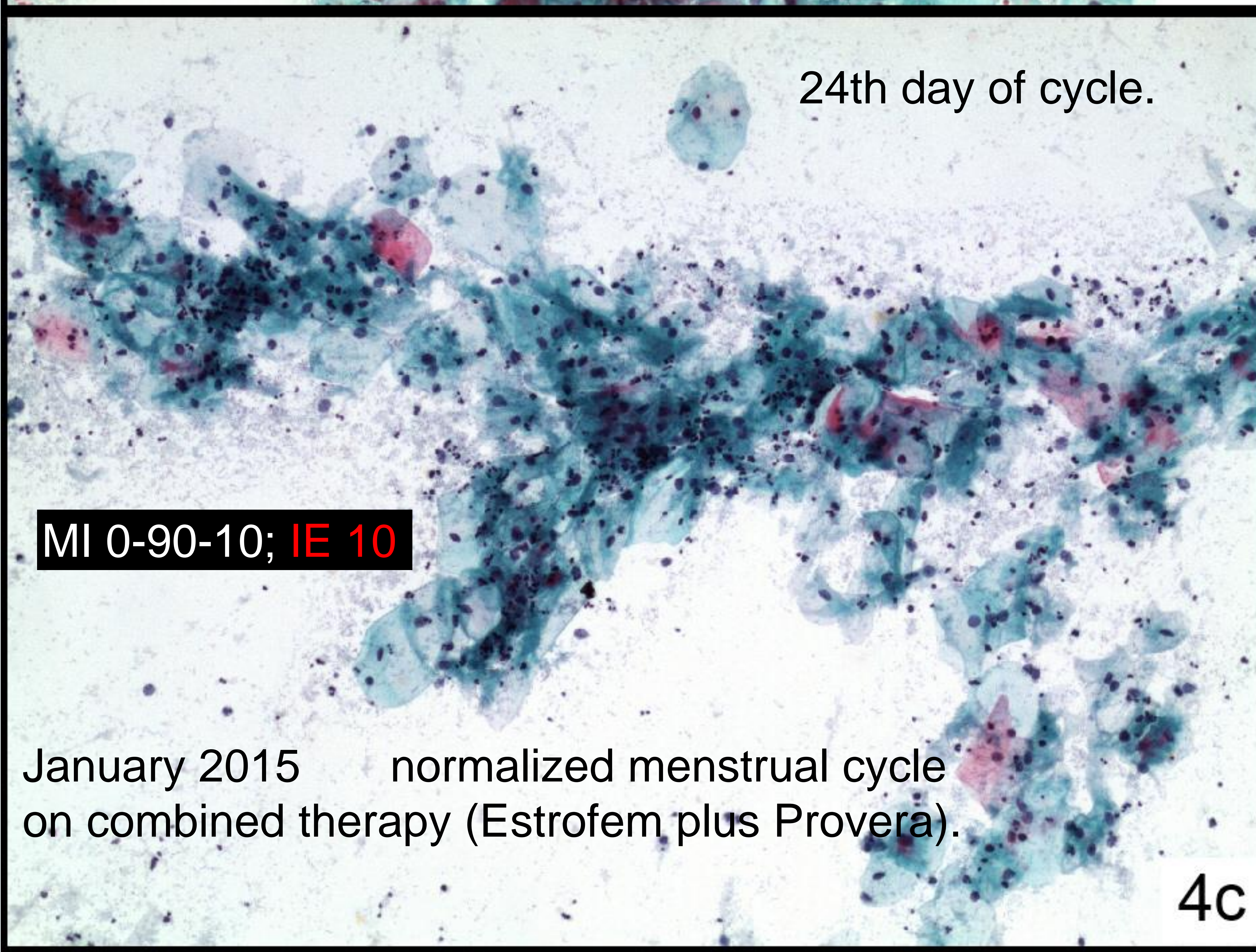
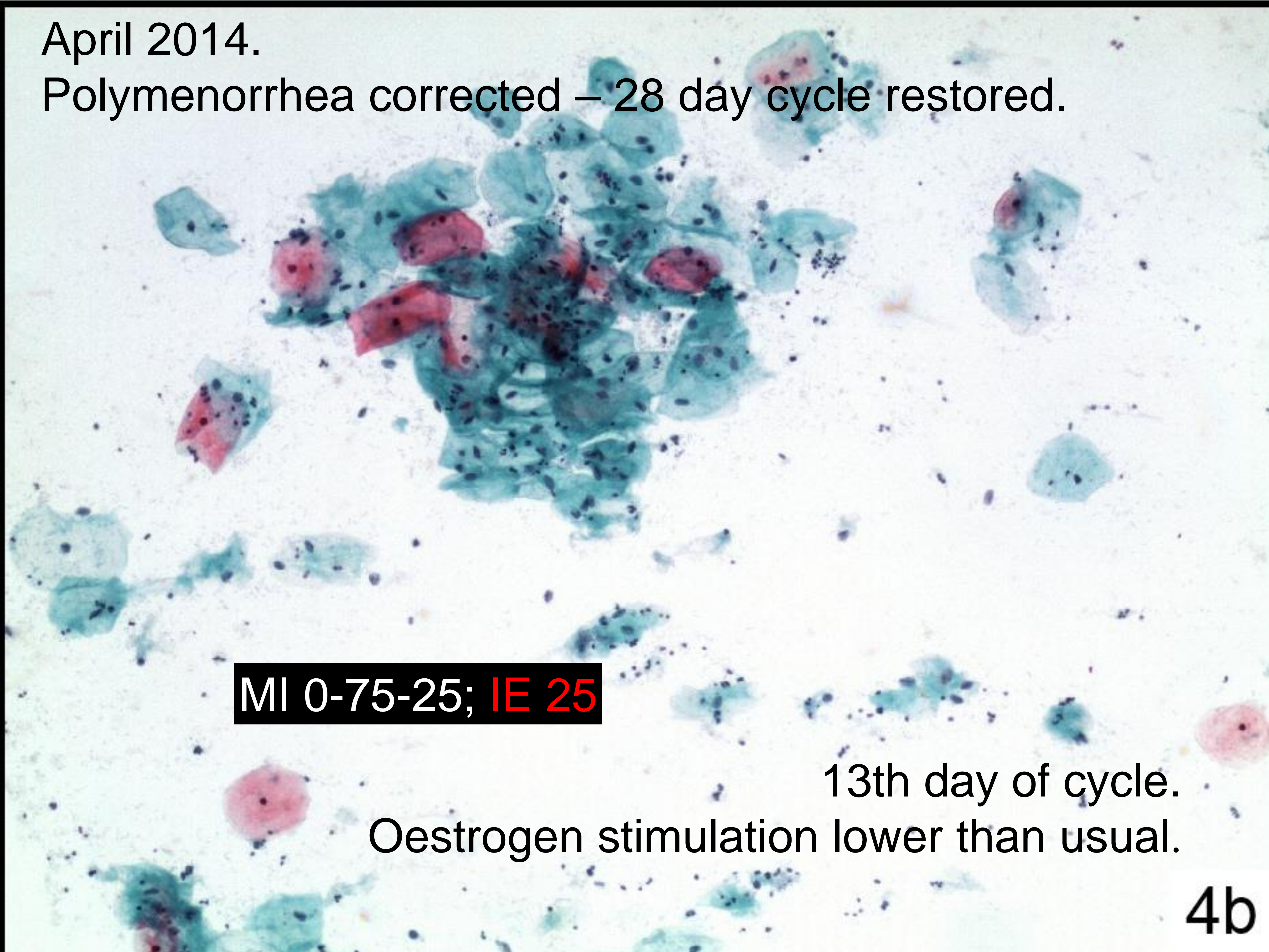
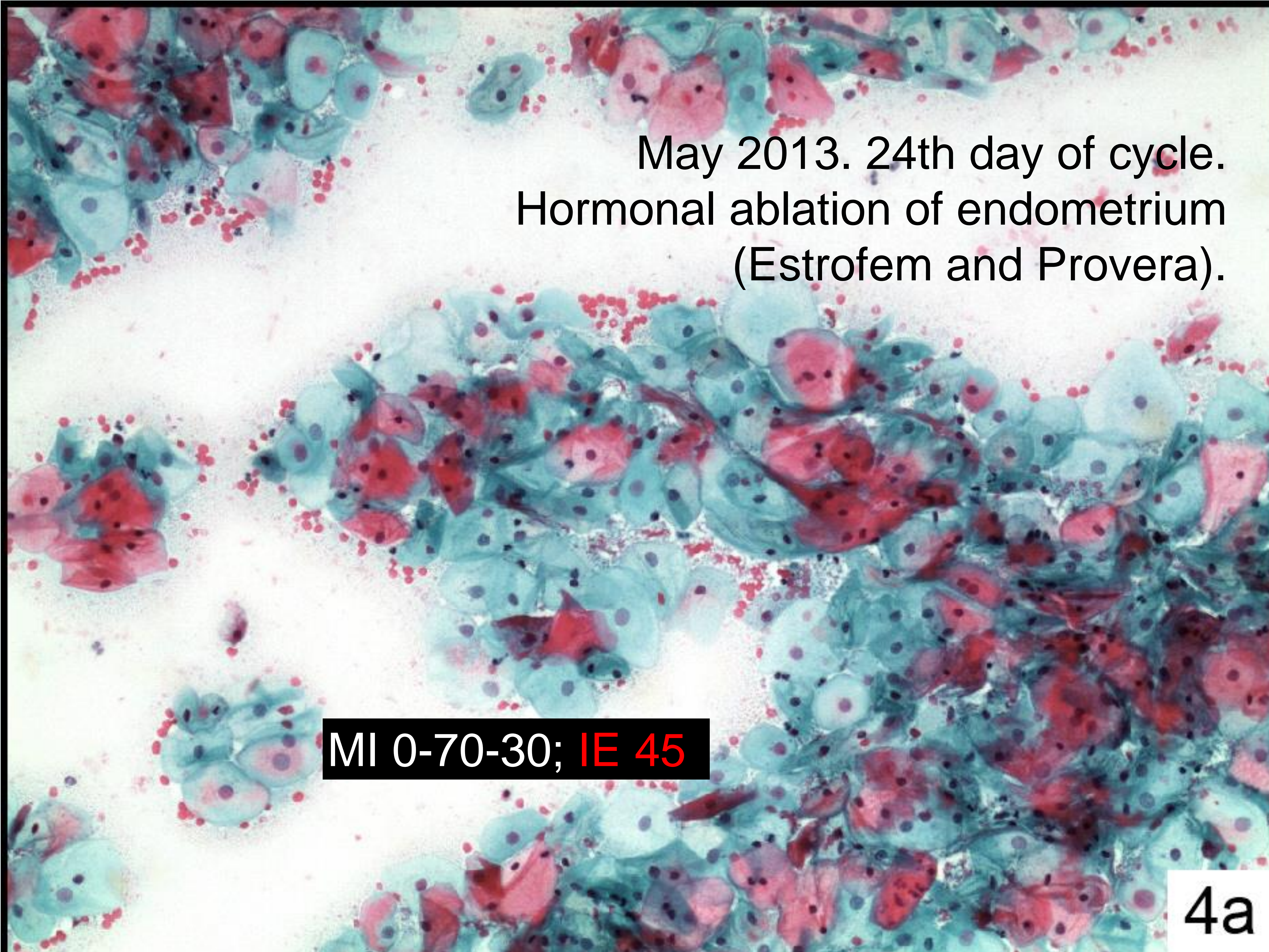
4c



October 2015. 21st day of cycle.
Corresponding to the day of cycle.

Estrofem lowered and subsequently stopped.
Minimal gestagen administration continued.

4d

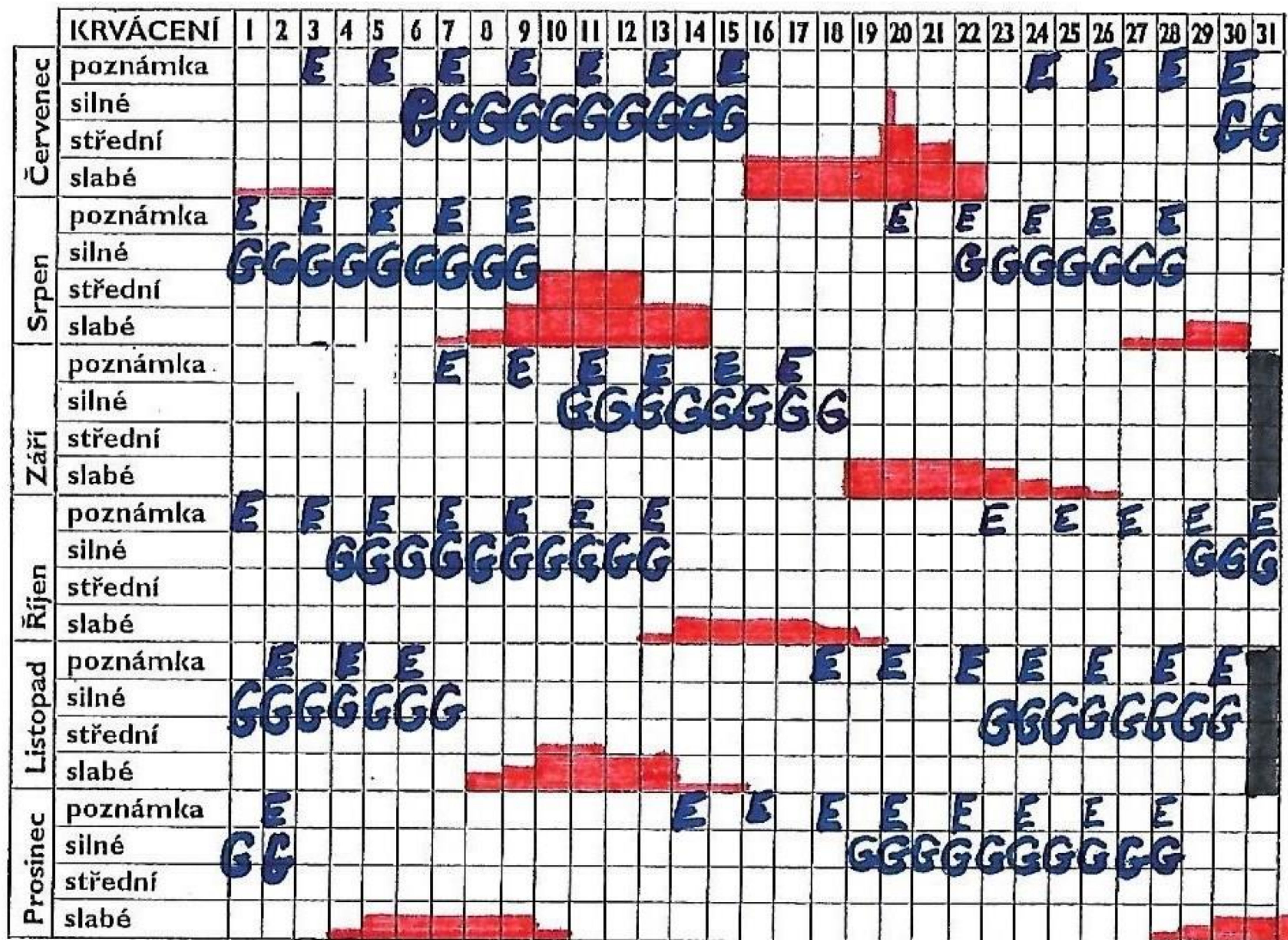
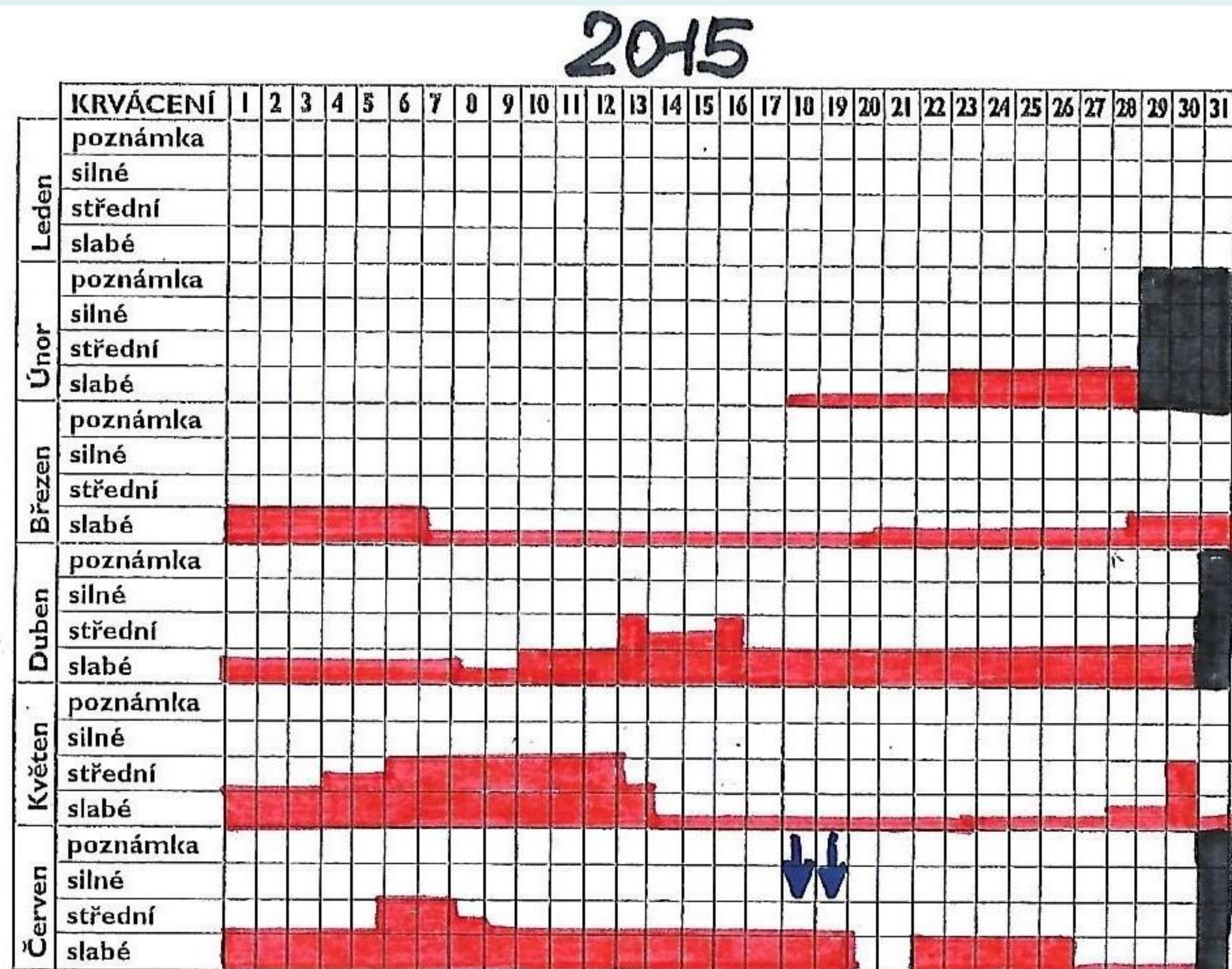


11 years, 6 months. 156 cm, 50 kg.

Early menarche. Polymenorrhea.

Polymenorrhea sanata on combined hormonal therapy monitored with altogether 11 hormonal cytologies.

Menstrual calendar provides an overview of the therapy and intensity of bleeding recorded by the patient herself.



18 years, 166 cm, 43 kg.

Amenorrhea secundaria. Anorexia mentalis.

April 2014. First visit.

Menarche 2009 at the age of 13 (body weight 51 kg).

August 2013 stay in USA, loss of weight to 40 kg.

Since November 2013 secondary amenorrhea.

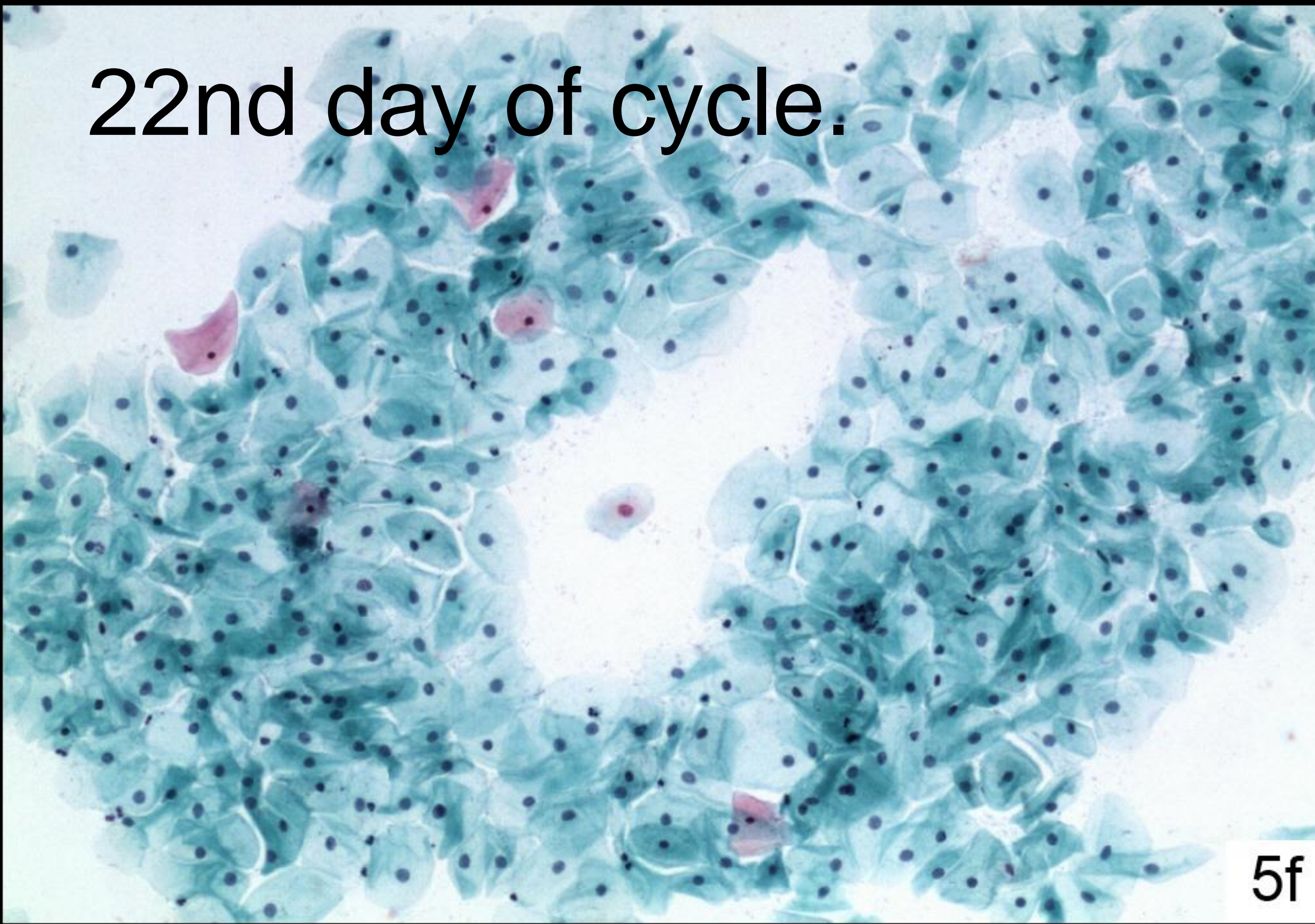
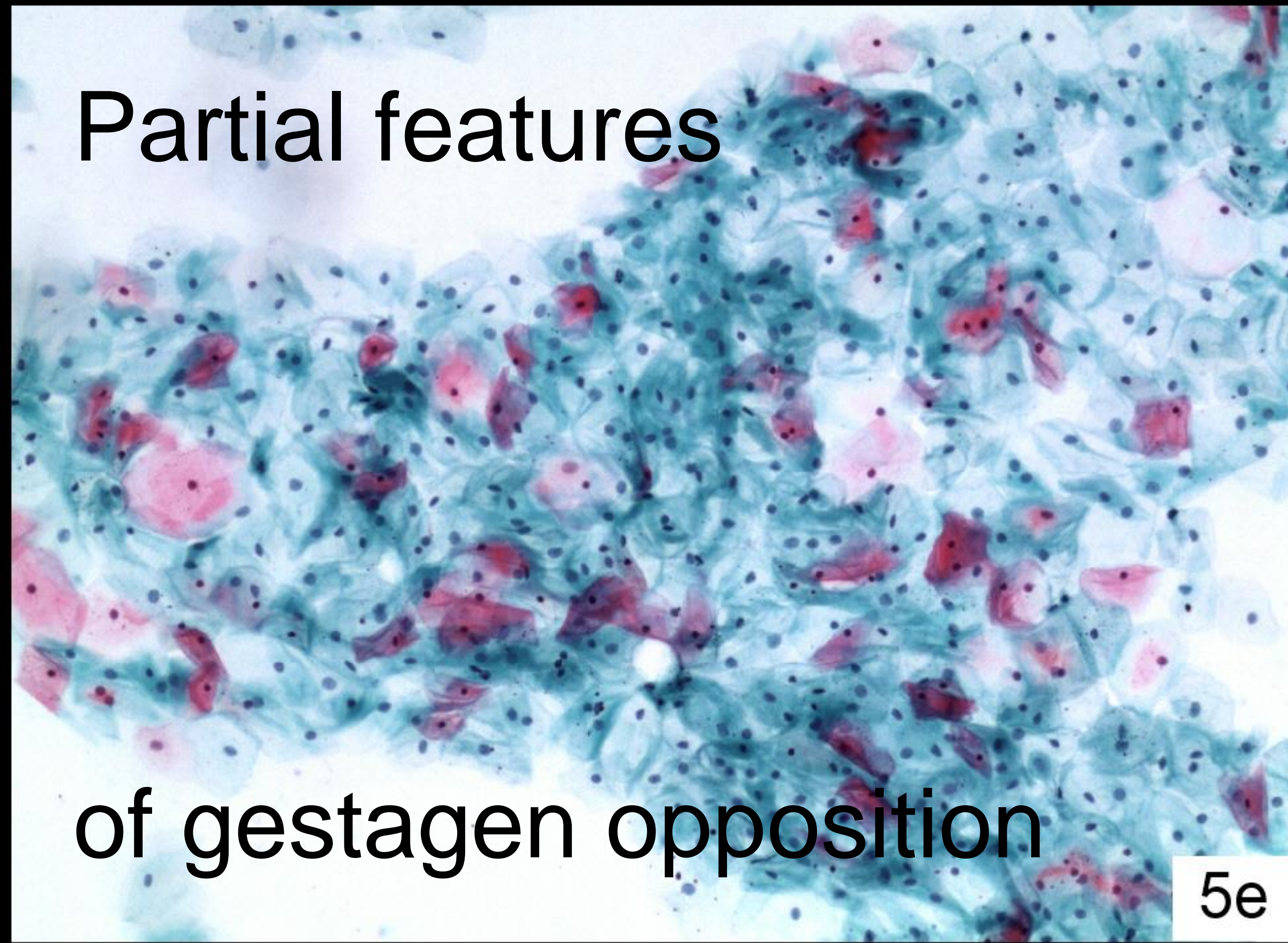
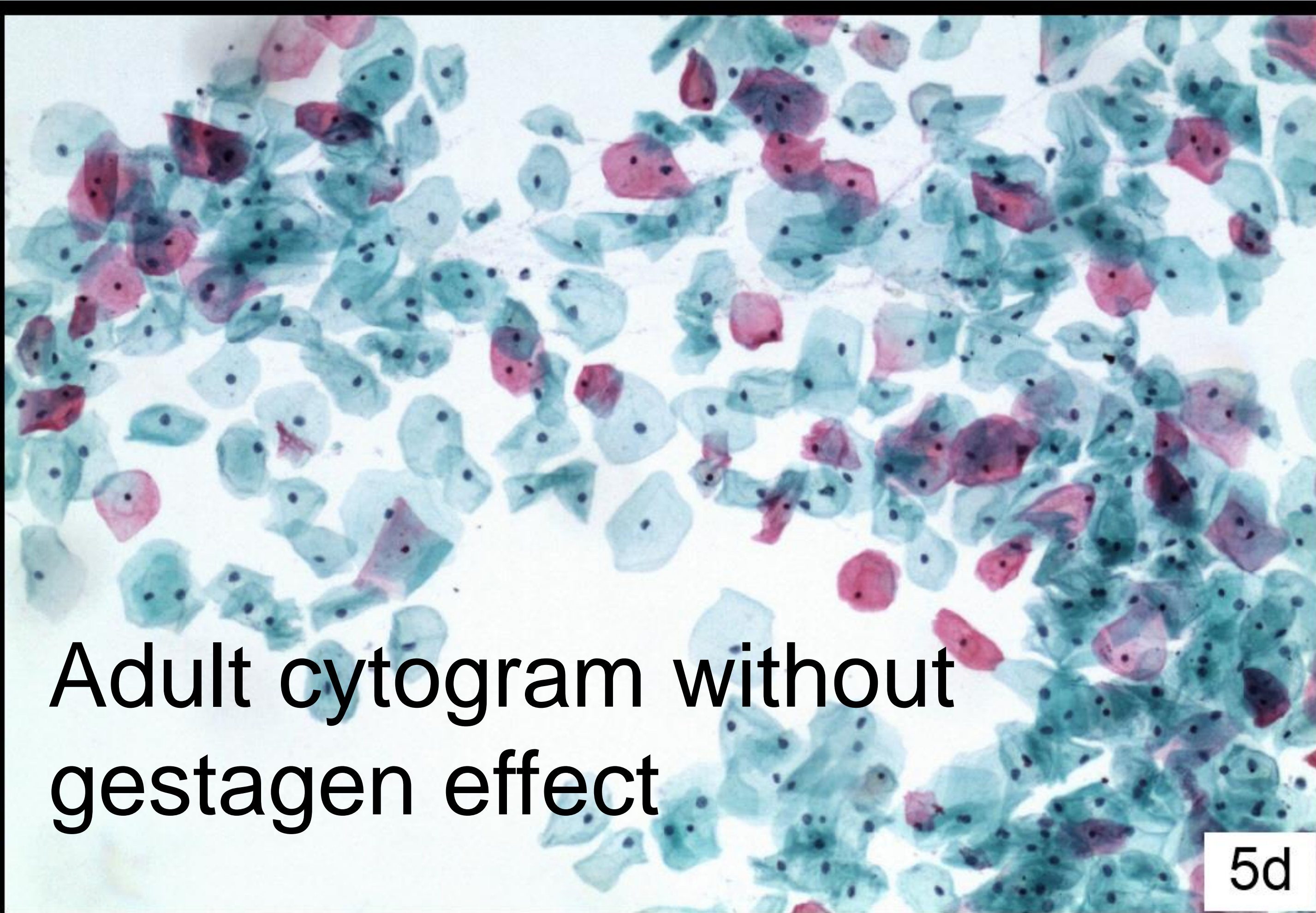
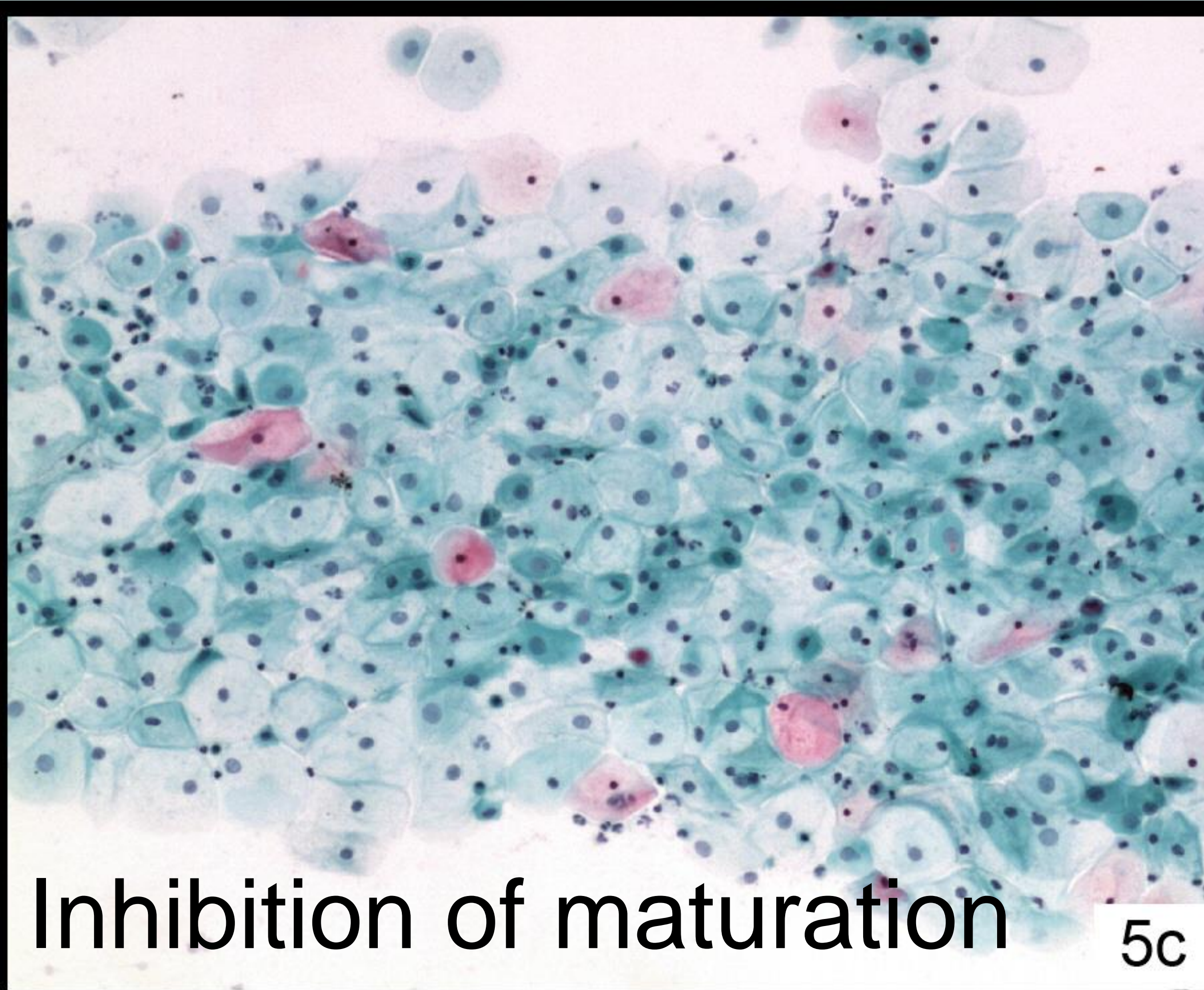
18 years

April 2014: 166 cm; 43 kg

May 2014: 166 cm; 47,8 kg

June 2014: 166 cm; 51,1 kg

August 2014: 166 cm; 53 kg



August 2014: 166 cm; 53 kg;
Agolutin i.m.; Duphaston

March 2015: 166 cm; 53 kg;
Duphaston

Sept. 2015: 166 cm; 56 kg;
Duphaston th. stopped

March 2016: 166 cm; 57 kg;
no hormonal therapy

December 2014. Weight 53, 8 kg. Menstruation started after 13 months. 9 more months of hormonal support

11 kg weight loss and subsequent secondary amenorrhea.
Treated with psychotherapy, combined hormonal therapy and monitored with hormonal cytologies.
Lost weight regained and a spontaneous menstrual cycle returned.
At the one-year follow-up point her favourable status continues.

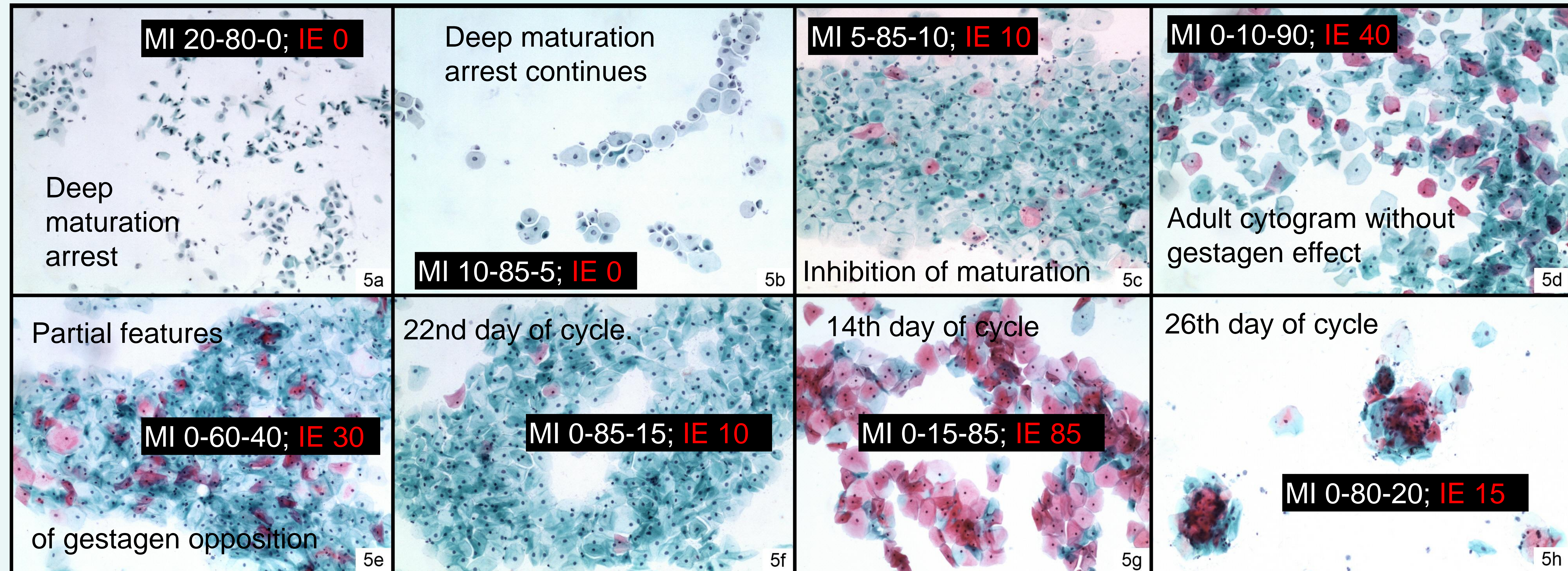
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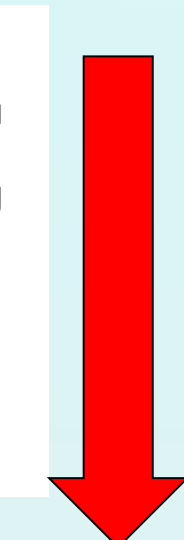


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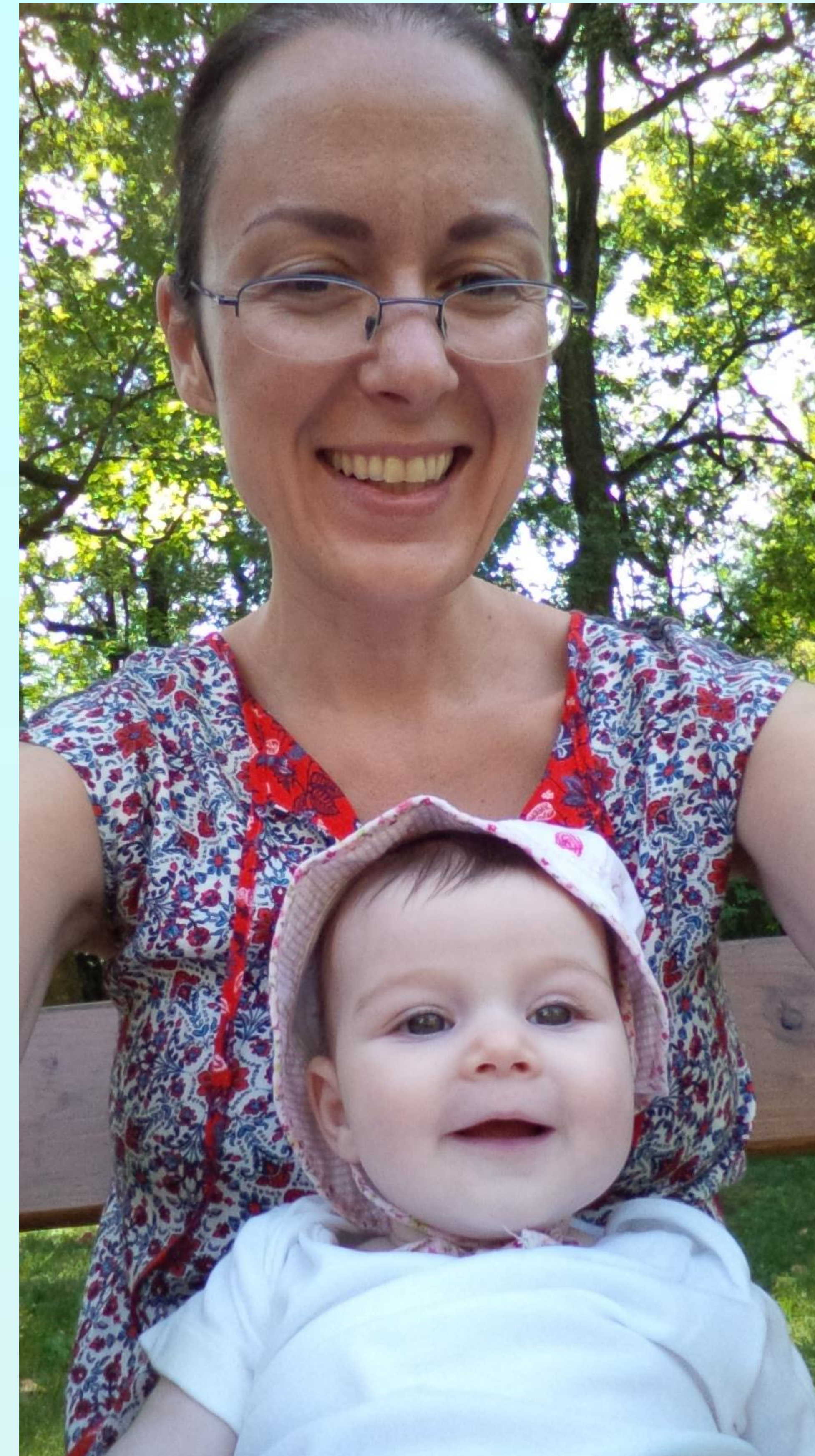
Conclusion

- ❖ Caring for reproductive health of women begins immediately after birth.
- ❖ It covers a broad spectrum of risk conditions only recently detected thanks to advanced diagnostics (autoimmune and genetic diseases).
- ❖ A large part relates to new socio-economic conditions (eating disorders, excessive training, and stress).
- ❖ Hormonal cytology represents a non-invasive and economical method illustrating the direct steroid effect on targeted cells.
- ❖ In a well-tuned setting of close clinical-pathological co-operation it contributes to reproductive health support by:
 - ❖ Indicating the possible need and type of steroid therapy
 - ❖ Monitoring the normalization of cycle disturbances

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