

ELISA Dry Lab - Graphs of Estradiol and Progesterone Levels in Infertile Female Patients

Mary Zelinski, PhD, ONPRC

Lynda Jones, MS, ONPRC

See **Additional Resources on Reproductive Systems** for the ELISA lab on which this data is based.

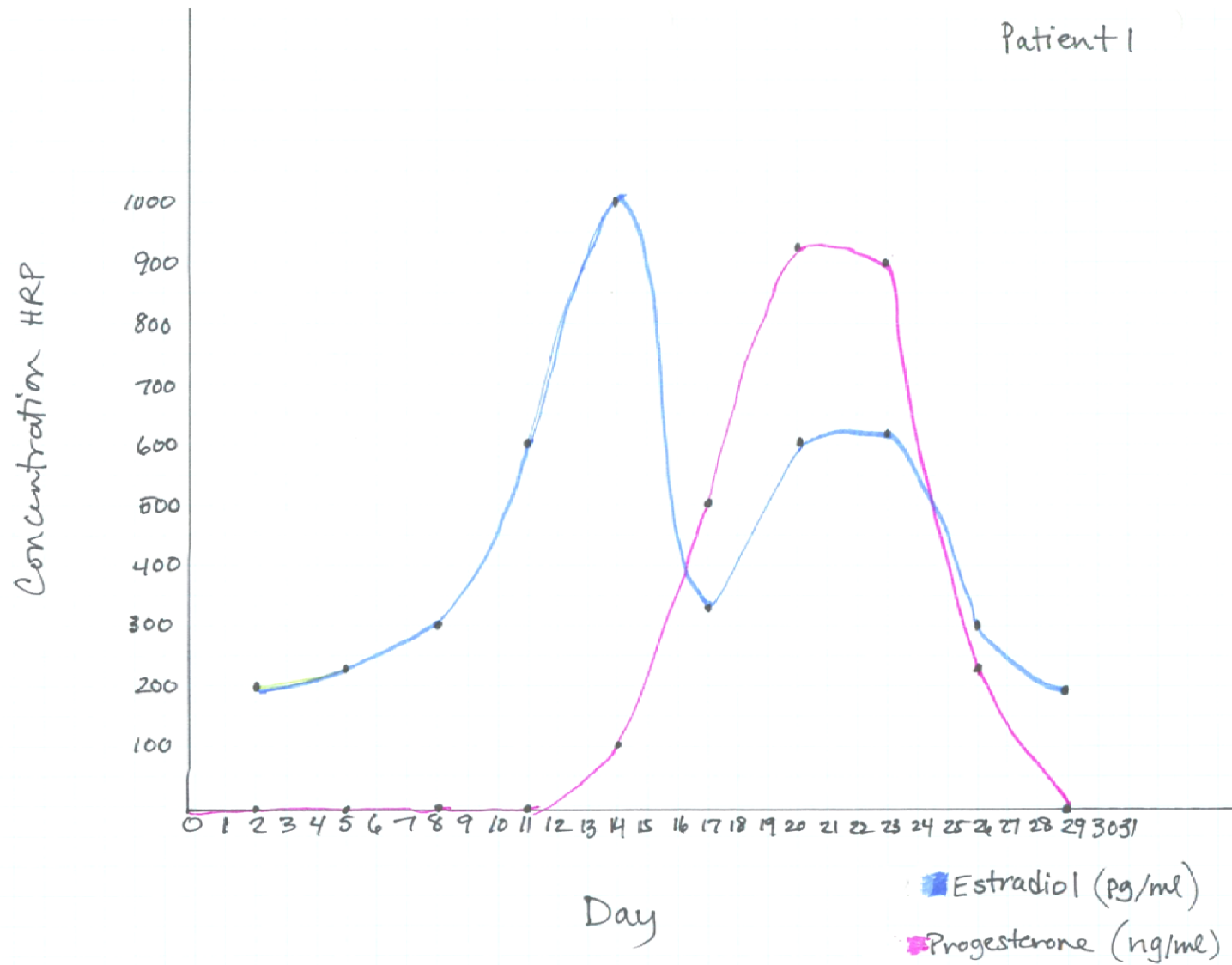


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Patient	1	Normal				Patient	2	E surge, no P			
	Estradiol			Progesterone			Estradiol			Progesterone	
Day	HRP	PBS		HRP	PBS	Day	HRP	PBS		HRP	PBS
2	200	800		0	1000	2	200	800		0	1000
5	240	760		0	1000	5	240	760		0	1000
8	300	700		0	1000	8	300	700		0	1000
11	600	400		0	1000	11	600	400		0	1000
14	1000	0		100	900	14	1000	0		100	900
17	360	640		500	500	17	360	640		100	900
20	600	500		950	50	20	600	500		100	900
23	620	480		900	100	23	620	480		0	1000
26	300	700		250	750	26	300	700		0	1000
29	200	800		0	1000	29	200	800		0	1000
Patient	4	Not cycling				Patient	5	E surge, inadequate Luteal phase			
	Estradiol			Progesterone							
Day	HRP	PBS		HRP	PBS	Day	HRP	PBS		HRP	PBS
2	200	800		0	1000	2	200	800		0	1000
5	200	800		0	1000	5	240	760		0	1000
8	200	800		0	1000	8	300	700		0	1000
11	300	700		0	1000	11	600	400		0	1000
14	300	700		100	900	14	1000	0		100	900
17	300	700		100	900	17	360	640		500	500
20	200	800		100	900	20	600	500		500	500
23	200	800		0	1000	23	620	480		500	500
26	200	800		0	1000	26	300	700		250	250
29	200	800		0	1000	29	200	800		0	0
Patient	3	hi E (Cyst) no P									
	Estradiol			Progesterone							
Day	HRP	PBS		HRP	PBS						
2	600	400		0	1000						
5	600	400		0	1000						
8	800	200		0	1000						
11	800	200		0	1000						
14	1000	0		100	900						
17	1000	0		100	900						
20	1000	0		100	900						
23	1000	0		0	1000						
26	1000	0		0	1000						
29	1000	0		0	1000						

Data for Graphs Patients 1 - 5



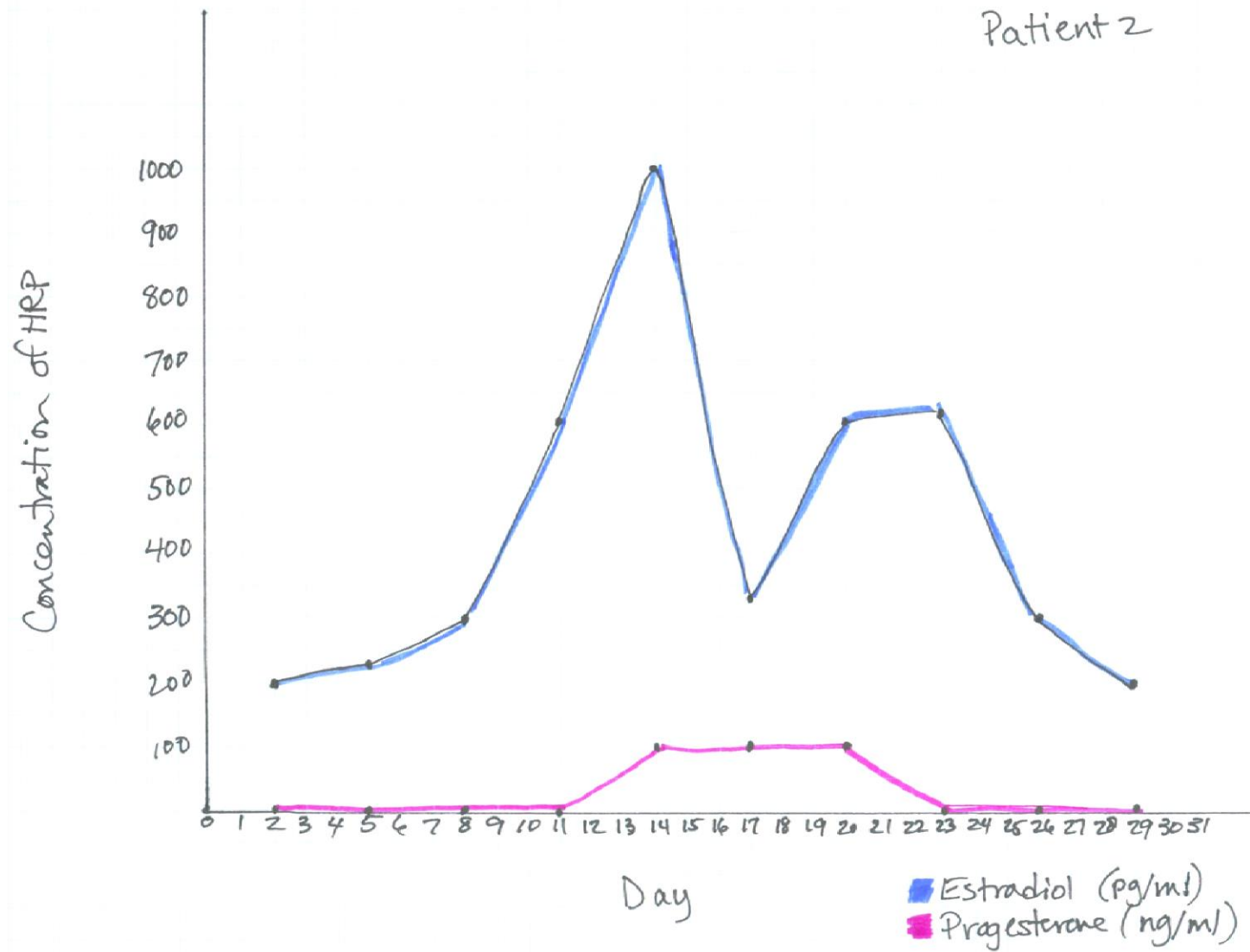


Patient 1

Although Patient 1 shows normal levels of estradiol made by the mature follicle prior to ovulation (follicular phase) and progesterone made by the corpus luteum after ovulation (luteal phase), she is infertile.

Infertility could be due to:

1. scarring in her oviducts from sexually transmitted disease (STD) or pelvic inflammatory disease (PID) that would prevent sperm from reaching the oocyte (egg) so fertilization cannot occur, or prevent implantation due to scarring in the uterus.
2. endometriosis, one of the most common causes of infertility in women, where the endometrium (uterine lining) grows outside the uterus (for example, in the oviducts) in an uncontrolled manner that can block the oviducts.
3. an aged (old) oocyte that is unable to be fertilized.
4. a defective embryo that fails to implant.
5. anti-sperm antibodies made by the patient against her partner's sperm that clear them from her body.
6. congenital abnormalities of the oviducts that would prevent oocyte or embryo migration to the uterus, or of the uterus that would prevent implantation of an embryo.
7. male infertility (the patient herself is fertile, but her male partner is not) due to low sperm count, absence of sperm, low sperm motility, abnormal sperm morphology, low semen volume.

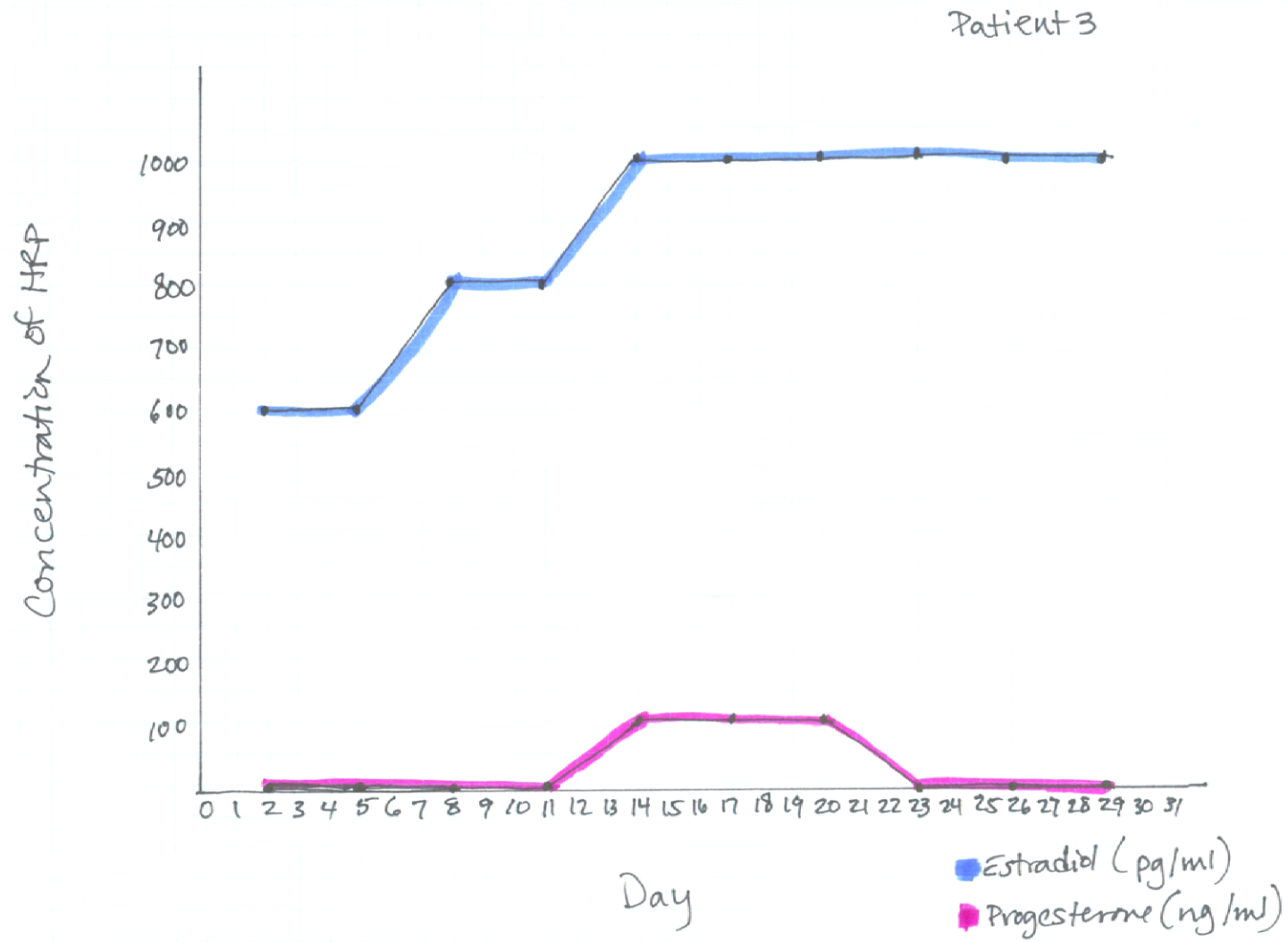


Patient 2

Patient 2 shows normal estradiol production but low progesterone production.

Infertility could be due to lack of ovulation. The patient did not have a luteinizing hormone (LH) surge so no oocyte was released and no corpus luteum formed to produce progesterone. Anovulation could be due to:

1. polycystic ovarian syndrome (PCOS), one of the most common causes of infertility in women wherein many follicles form, but cannot ovulate; this is accompanied by high levels of androgens made by the many follicles.
2. hypothyroidism.
3. “stress” due to inadequate patient nutrition (anorexia, inadequate caloric intake), excessive exercise (for example, many female Olympic athletes in track events are anovulatory).
4. genetic conditions where the anterior pituitary does not make luteinizing hormone (LH) or where the ovary cannot respond to the LH surge.



Patient 3

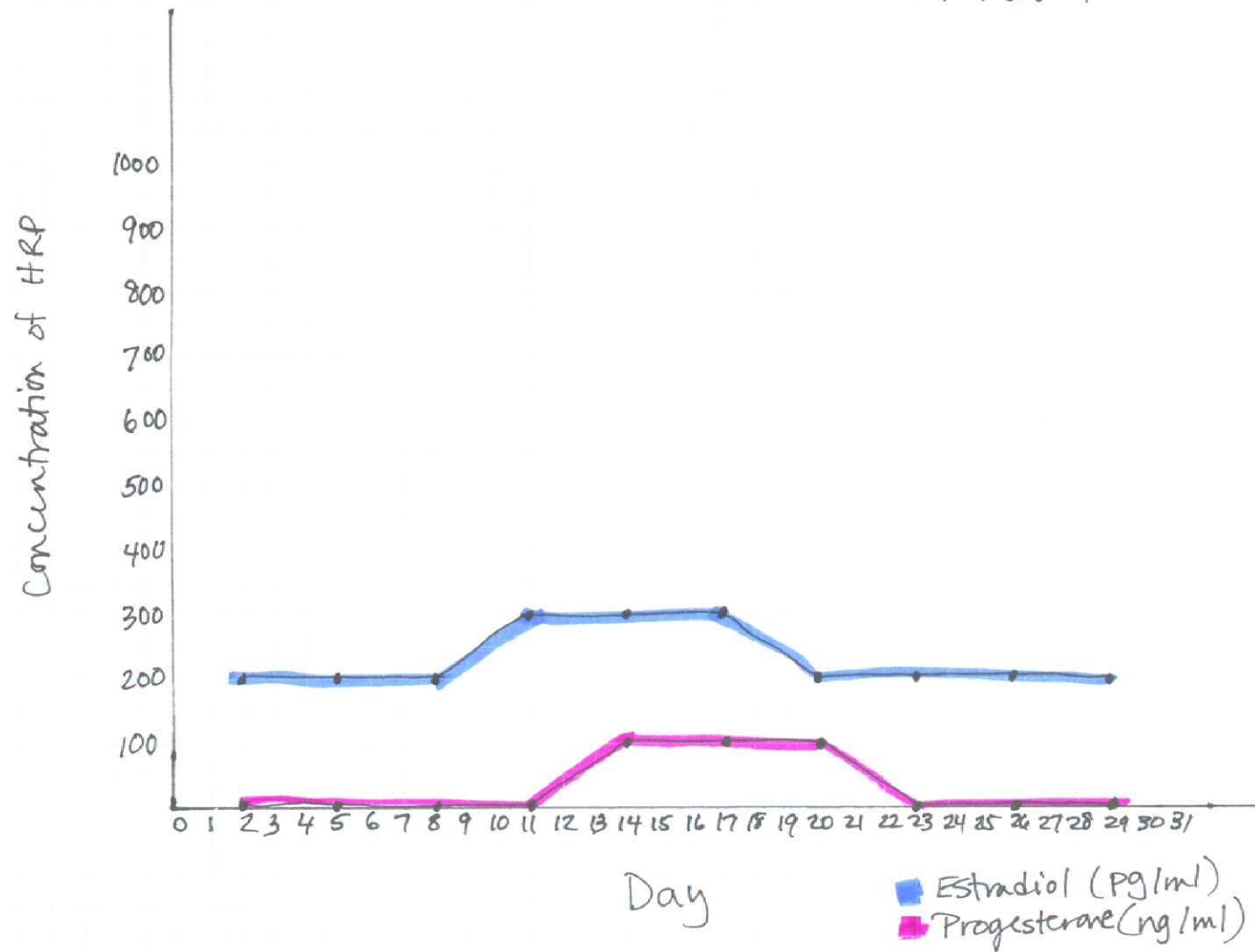
Patient 3 was producing estradiol, but in larger than normal quantities, and producing little progesterone.

Infertility could be due to an ovarian cyst which is a mature follicle that makes estradiol and sometimes grows larger than normal.

However, since there was no luteinizing hormone (LH) surge and no ovulation, this resulted in a lack of formation of a corpus luteum which would have produced progesterone.

Ovarian cysts sometimes regress on their own, or if they get too large or 'twist' the ovary (ovarian torsion, very painful), the ovary needs to be surgically removed.

Patient 4



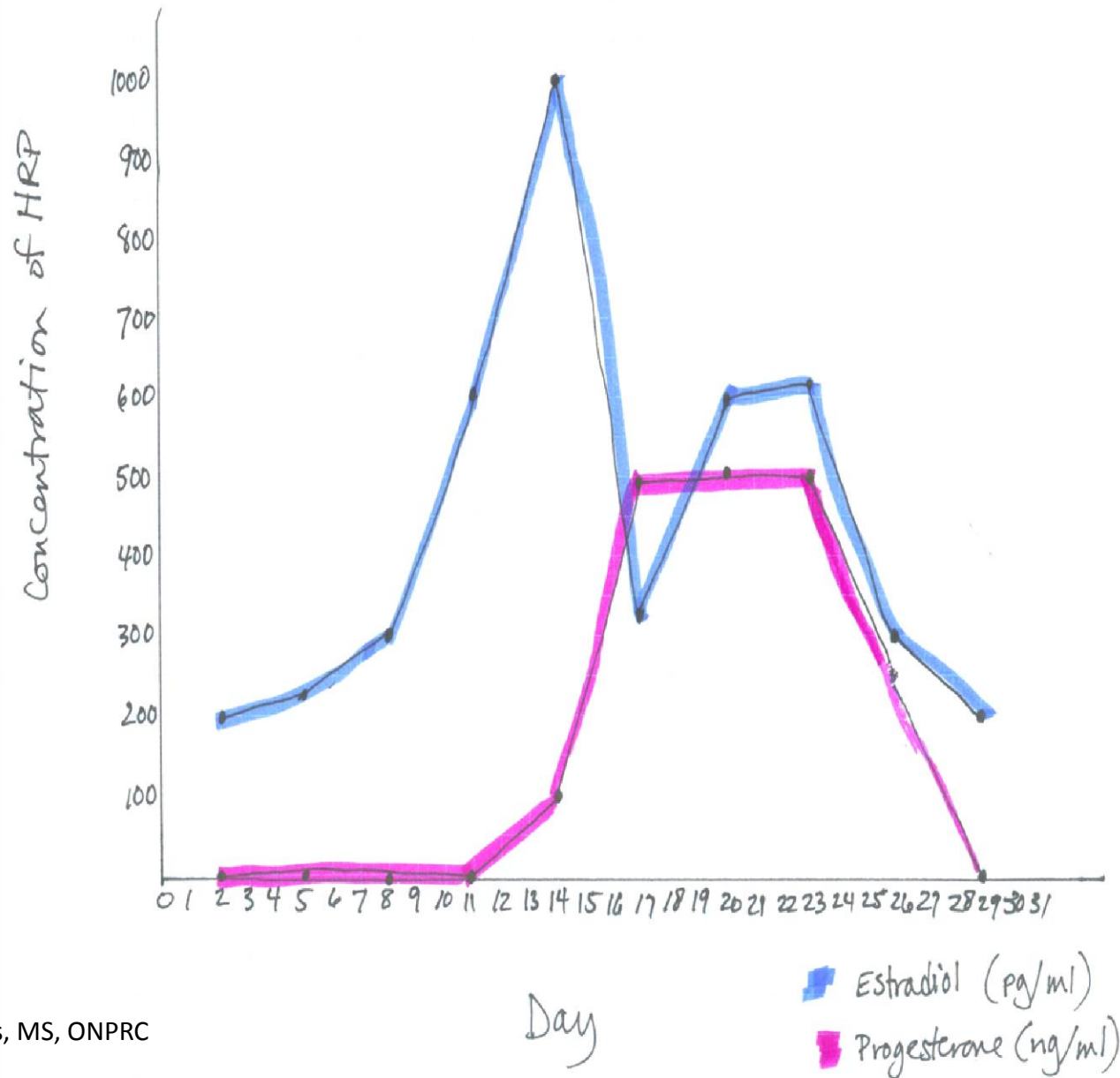
Patient 4

Patient 4 shows low levels of both estradiol and progesterone production. This is collectively called hypogonadism.

Infertility could be due to premature ovarian failure caused by:

1. a genetic condition called premature ovarian failure (POF) where ovaries run out of follicles/oocytes decades before natural menopause which would normally occur (at age 50).
2. cancer treatment (chemotherapy drugs and/or radiation) which destroy follicles with their oocytes leading to POF.
3. a large exposure to environmental toxins which can also destroy follicles with their oocytes leading to POF.
4. lack of Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH) production by the anterior pituitary gland from a genetic condition, pituitary tumor, or damage to the pituitary gland (i.e., accidents that cause brain damage); lack of FSH and LH production is called hypopituitary hypogonadism.
5. lack of Gonadotropin Releasing Hormone (GnRH) from the hypothalamus from a genetic condition, hypothalamic tumor or damage to the hypothalamus; this condition is called hypothalamic hypopituitary hypogonadism, or Kallman's syndrome.

Patient 5



Patient 5

Patient 5 shows normal estradiol levels and some, but inadequate, production of progesterone indicating ovulation took place and a corpus luteum partially formed.

Infertility could be caused by the lining of the uterus not prepared for implantation because of inadequate levels of progesterone and this can lead to miscarriage. This condition is called inadequate luteal phase or luteal dysfunction.