

## Influence of Tamoxifen on the biological markers of fertility: a case series of symptothermal charting

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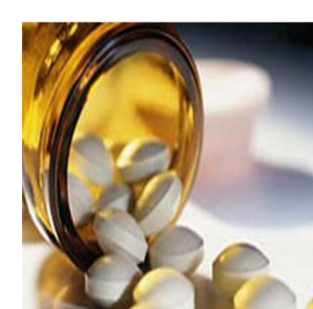
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### The Tamoxifen:

- It is a selective estrogen receptor modulator for treatment of invasive breast cancer (+ER) after surgery, radiation/chemotherapy and for preventing invasive breast cancer in women at high risk

- Effects:

- Breast tissue: anti-estrogenic
- Uterus and ovary: estrogenic properties
  - Endometrial hyperplasia, polyps
  - Ovarian cysts
- Cervix: anti-estrogenic?



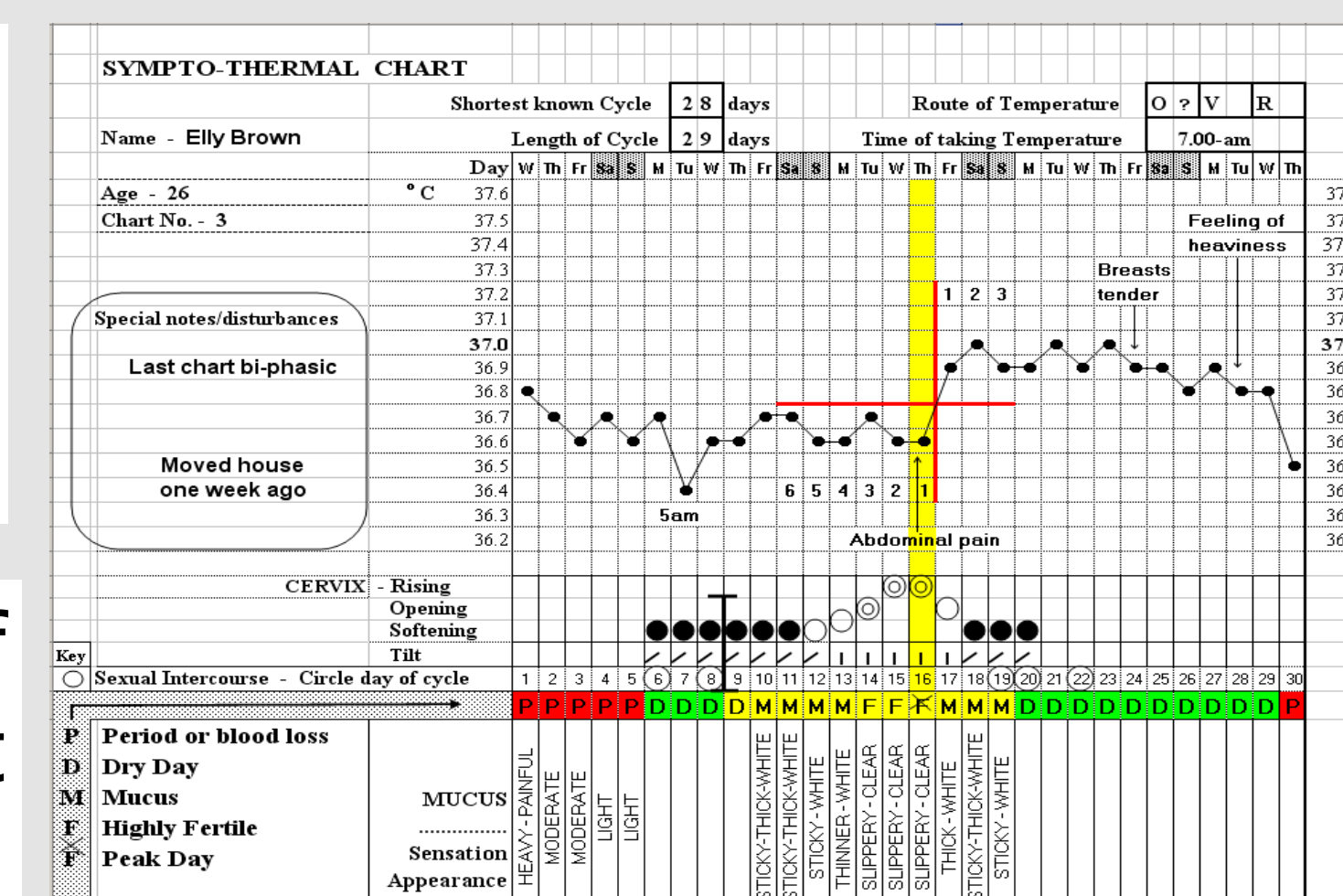
- Pregnancy is not recommended while taking Tamoxifen (TMX)

- Embryo may be damaged
- Breast cancer progression, due to pregnancy hormones

- **Is it Natural Family Planning an option for women taking TMX?**



**Objective:** We present a case series of symptothermal charting from women with breast cancer taking Tamoxifen in order **to clarify its effects on fertility indicators**. Additional tests were done to confirm fertility status in some cycles (hormonal tests, LH test, ovarian ultrasound, mucus characterization with microscopy). Figure 1 shows a typical symptothermal chart.



**Figure 1.** Typical symptothermal chart

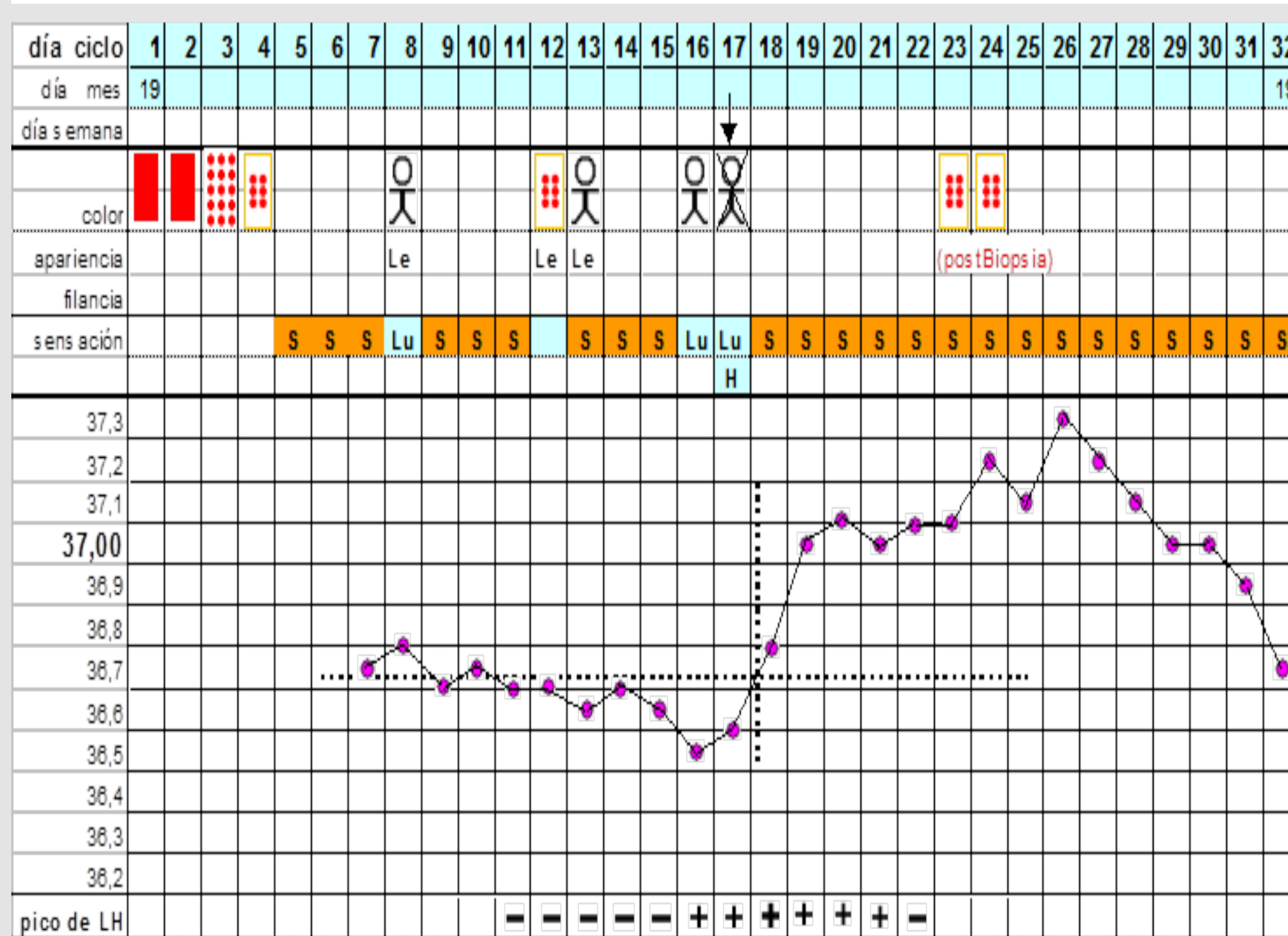
**Case 1:** 45 years old, 6 children. Breast cancer treated with surgery and radiation. Teacher and user of NFP, with normal symptothermal charts before treatment with TMX. Charts during 5-year TMX treatment mainly showed lengthening of cycles, shortening of menstruation, biphasic temperature pattern (ovulation confirmed with LH+), some persistent follicles and decrease or lack of cervical mucus (Figure 2).

**Case 2:** 33 years old, 1 child. Breast cancer treated with surgery, chemotherapy and radiation. Teacher and user of NFP, with normal charts before TMX. Charts during 5 years with TMX treatment showed similar changes as case 1.

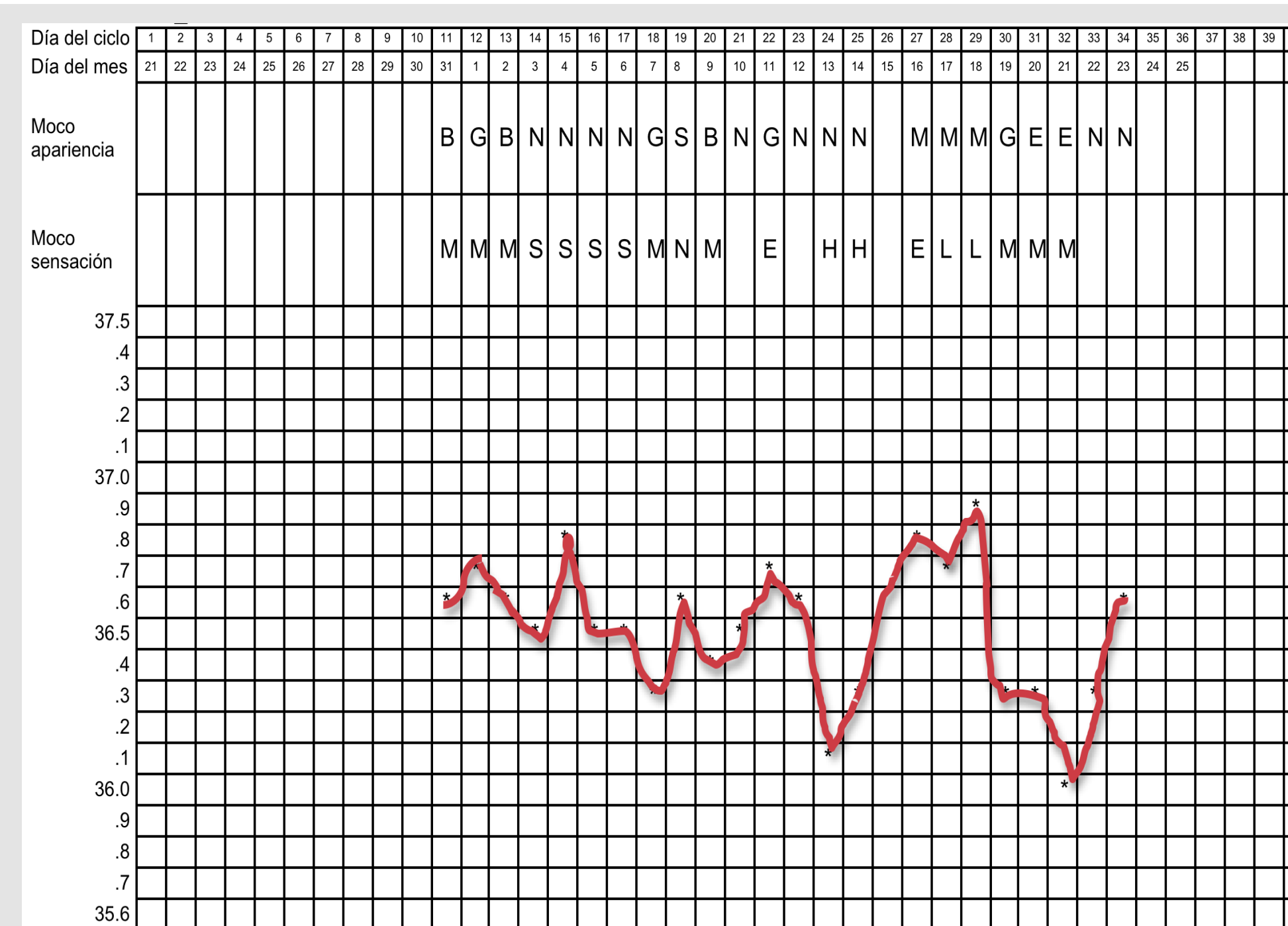
**Case 3:** 44 years old, 6 children. Breast cancer treated with surgery and radiation. No NFP user before. Charts during TMX treatment showed anovulatory and ovulatory cycles, with abnormal mucus and temperature pattern progression (Figure 3).

**Case 4:** 40 years old, 3 children. User of NFP. Breast cancer treated with chemotherapy, surgery and radiation. She took TMX only for 9 months. Charts during chemotherapy showed infertility, confirmed by US and hormonal tests. During treatment with TMX, cervical mucus was also missing (she did not record the basal body temperature) (Figure 4).

**Case 5:** 41 years old, 2 children. Breast cancer treated with surgery, chemotherapy, radiation and TMX. User of NFP. Amenorrhea from the 3<sup>rd</sup> cycle of chemotherapy. Charts during TMX treatment showed infertility, confirmed by US and hormonal tests. Cervical mucus pattern was altered, with dry sensation at vulva (Figure 5).



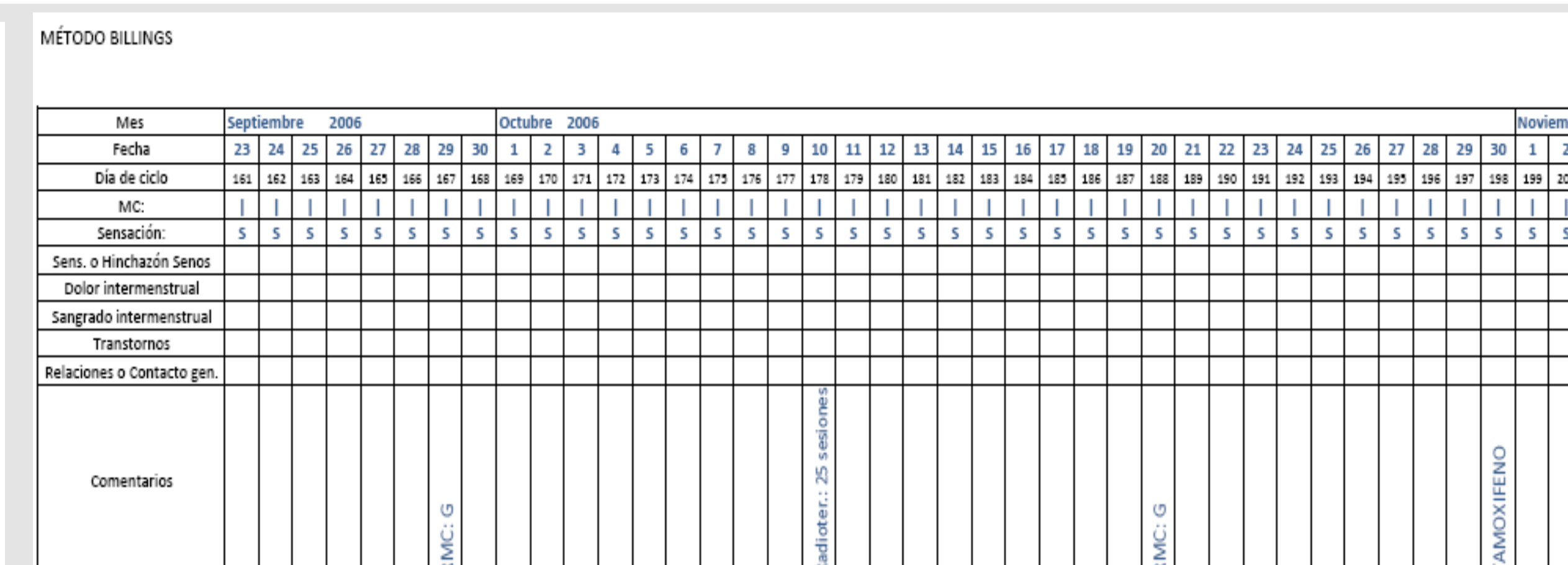
**Figure 2.** Case 2. Chart of an ovulatory cycle with abnormal cervical mucus pattern (Le=milky, S=dry, Lu=lubricative, pico de LH=LH peak)



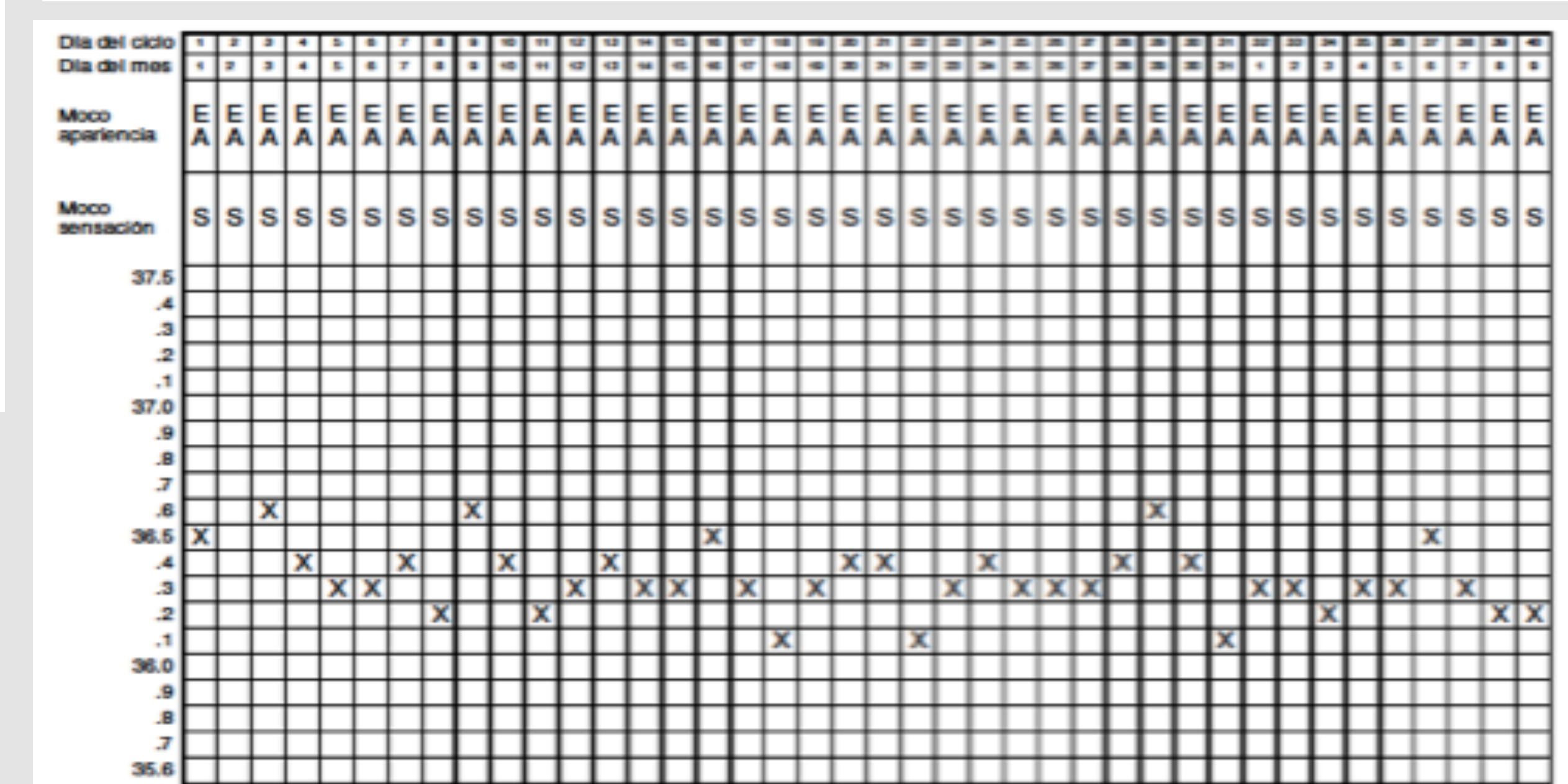
**Figure 3.** Case 3. Chart of an anovulatory cycle with abnormal temperature and cervical mucus pattern (M=wet, S=dry, H=humid, L=lubricative, B=white, N=no mucus, G=tacky, E=elastic)

### Conclusion:

- During treatment with TMX:
  - Cervical mucus is diminished or missing, even in ovulatory cycles.
  - **Peak day cannot be identified.**
  - In ovulatory cycles, other fertility indicators (temperature, cervix) are not altered.
- Women taking TMX can use NFP to avoid pregnancy** but rules of the symptothermal method concerning indicators other than mucus (temperature, Döring rule, palpation of the cervix) must be strictly followed.
- Additional tests to confirm fertility status can be used if in doubt.**



**Figure 4.** Case 4. Chart under chemotherapy and TMX. Amenorrhea. Anovulatory cycle with lack of cervical mucus (S=dry sensation)



**Figure 5.** Case 5. Chart of anovulatory cycle with abnormal temperature and cervical mucus pattern (E=elastic, A=yellow, S=dry sensation)