

The extended *Chlamydia trachomatis* diagnosis in patients with pelvic inflammatory disease - a better approach for the diagnosis of upper genital tract infections

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Background and Objective of the Study

Chlamydia trachomatis is an important cause of inflammation of the female adnexa (pelvic inflammatory disease, PID). Repeated infections tend to become chronic with the danger of irreversible damage to the uterine tubes, ectopic pregnancies, abnormalities of implantation (nidation), and early abortions.

Antibodies against *C. trachomatis* are accepted as indicators of infections of the upper genital tract. Antibodies against cHSP60 have also been discussed in this connection. Cross reactions between chlamydial HSP60 and human HSP60 can lead to serious autoimmune inflammatory reactions. In this study we investigated the antibody pattern against *C. trachomatis* HSP60 and *C. trachomatis* MOMP in women with PID, with the aim of estimating the diagnostic value of these serological tests.

Material and Methods

Subjects

We examined sera from 155 women belonging to the following four groups: women with PID having positive peripheral *C. trachomatis* findings after frequent reinfections (n=54), women with PID and negative peripheral *C. trachomatis* findings (n=35), women with bilateral tubal occlusion and negative peripheral *C. trachomatis* findings (n=27), and age-matched blood donors (n=39).

Methods

The condition of the fallopian tubes was established by laparoscopy and chromopertubation (injection of dye). *C. trachomatis* antigen was determined in the first-void urine and/or cervical smear by the LCR (Abbott, Wiesbaden, Germany). Women with PID and a positive *C. trachomatis* finding following repeated reinfections were given treatment. Specimens of serum from these patients were examined at the beginning of treatment and again six weeks later. However, the effect of treatment on titres is not discussed in this paper.

The antibodies were determined with the cHSP60-IgG-ELISA medac and *Chlamydia trachomatis*-IgG-and IgA-pELISA medac (medac, Hamburg, Germany).

Results

The four groups showed significant differences in the frequency of antibodies, $p < 0.0001$ (Tab. 1). There were definite differences between the blood donors and the three patient groups, not only as regards the frequencies but also in the pattern of positive antibody titres (Tab. 2). The highest prevalence of antibodies was found in patients with PID and positive swabs (repeated reinfections) and in patients with occluded fallopian tubes. These two patient groups also had the highest percentage of sera which were positive for all three antibody classes examined (Tab. 2). About one quarter of these sera contained all three antibodies. In patients with PID but negative swabs, this antibody pattern was found in only 8% of cases, and in none of the blood donors.

Clinical data in combination with the extended *C. trachomatis* serology (anti-*C. trachomatis* IgG and IgA antibodies together with anti-cHSP60 IgG antibody) are represented by illustrative cases (Figs. 1- 5).

Tab. 1: Frequency of antibodies in the various groups

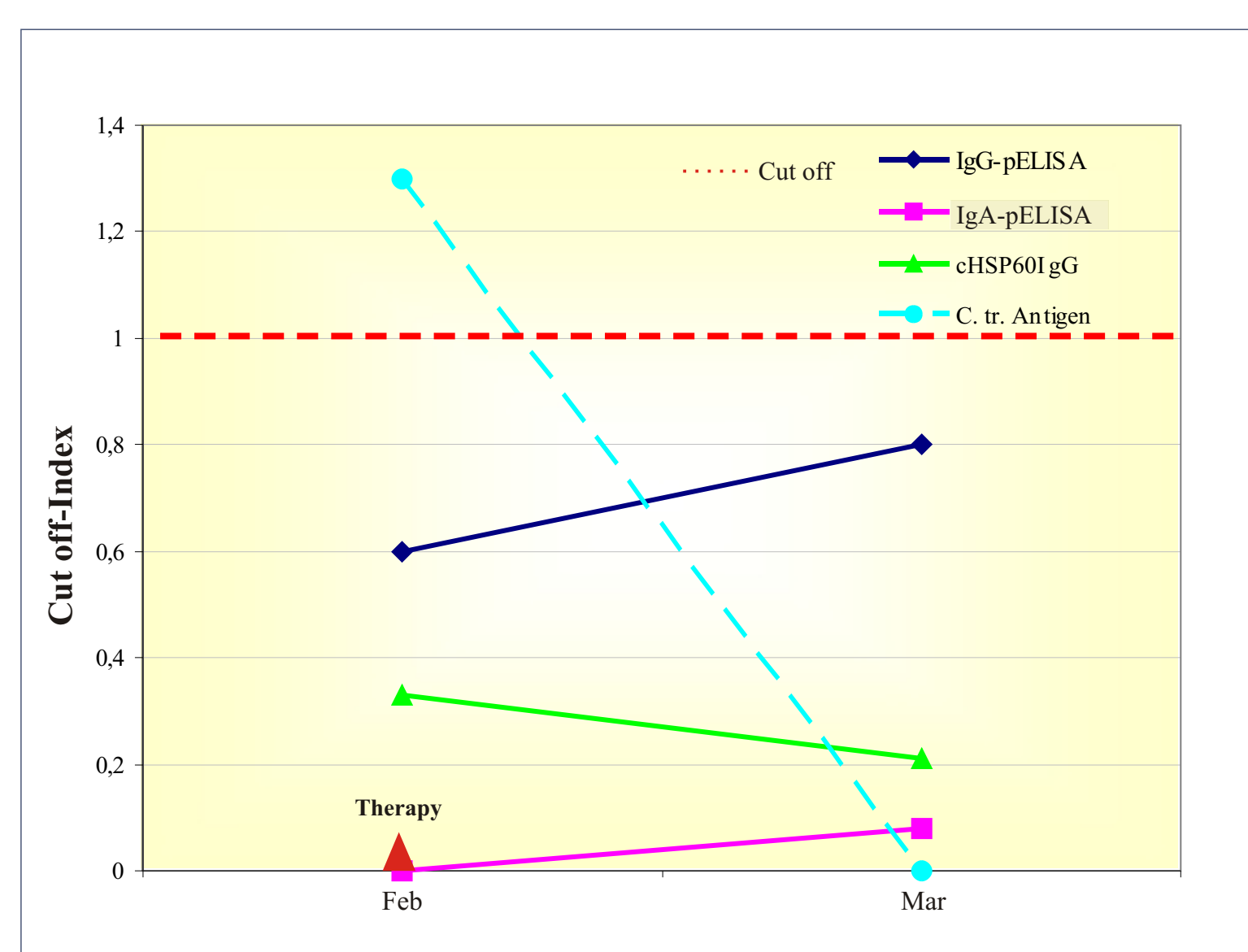
	Blood donors	Patients with		Neg. swab occluded tubes
		Neg. swab for <i>C. tr.</i>	Pos. swab for <i>C. tr.</i>	
n	39	35	54	27
<i>C. tr.</i> IgG pos.	8%	23%	78%	74%
<i>C. tr.</i> IgA pos.	3%	14%	33%	26%
cHSP60 IgG pos.	13%	20%	63%	70%

Tab. 2: Antibody patterns in the various groups

	Blood donors	Patients with		Neg. swab occluded tubes
		Neg. swab for <i>C. tr.</i>	Pos. swab for <i>C. tr.</i>	
1 antibody pos.	18%	20%	26%	22%
2 antibodies pos.	2%	6%	35%	41%
3 antibodies pos.	0%	8%	26%	22%
at least 1 antibody pos.	20%	34%	87%	85%

Fig. 1: Acute infection due to *C. trachomatis* without seroconversion

Patient No.: 11874
Clinical features:
- superficial infection
- lower abdominal pain
- vaginal discharge
Laboratory findings:
- CRP normal
- leucocyte counts normal
- erythrocyte sedimentation rate ↑



Patient No.: 10972
Clinical features:
- random result
- menstrual pain
Laboratory findings:
- no abnormalities

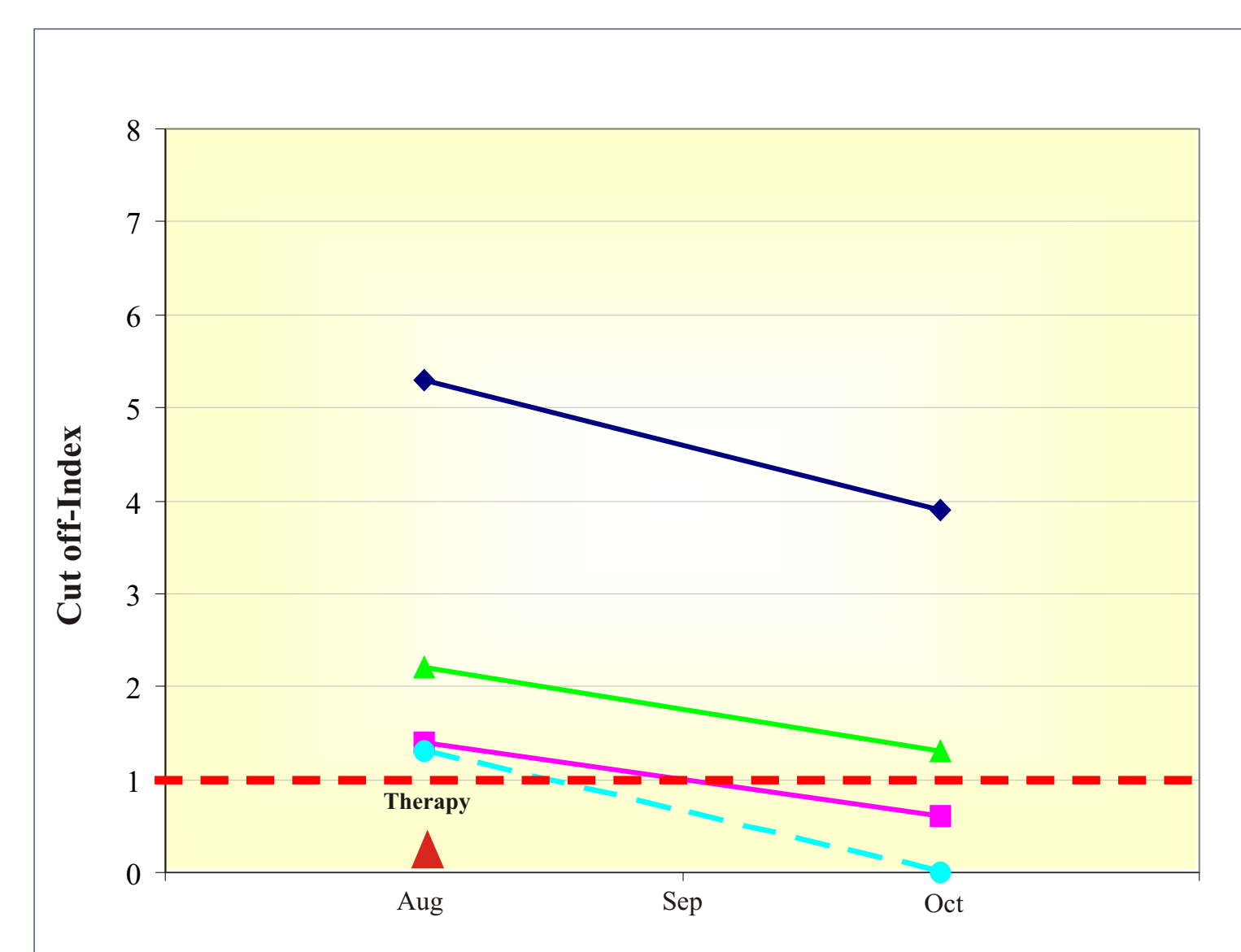


Fig. 3: Chronic infection due to *C. trachomatis*

Patient No.: 14249
Clinical features:
- reinfection
- hydrosalpinx
Laboratory findings:
- not available

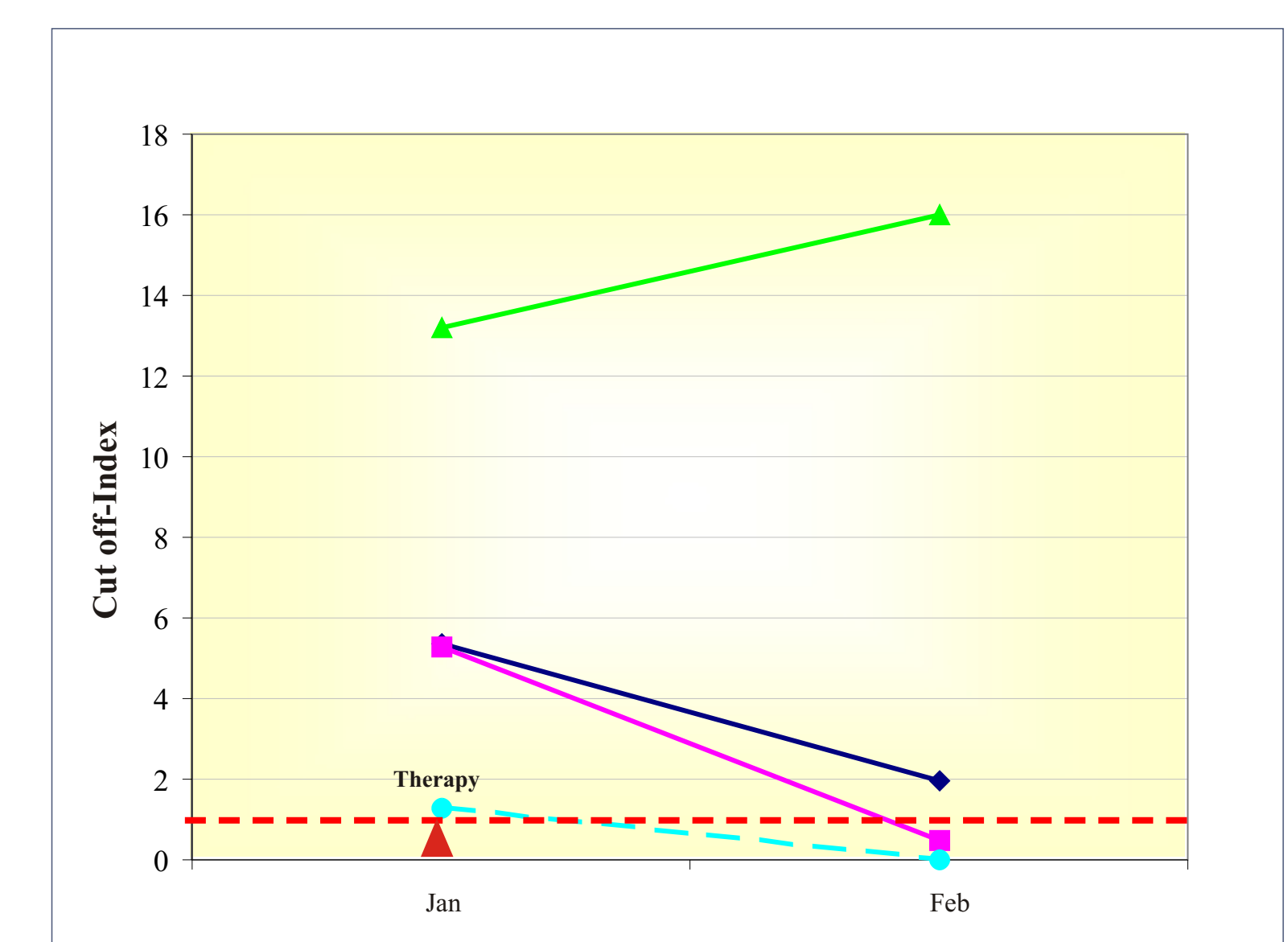
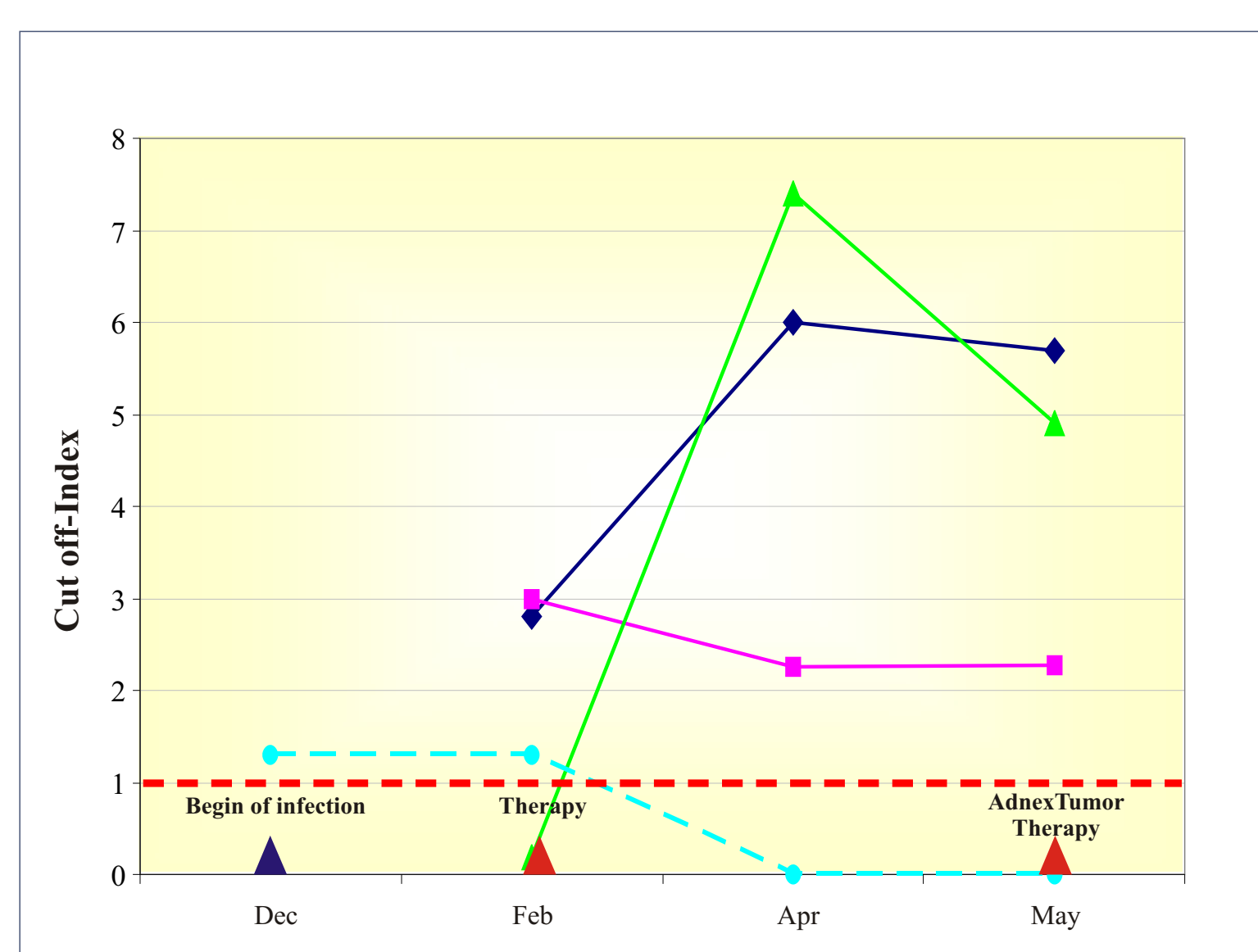


Fig. 4a: Acute infection → chronic infection

Patient No.: 12777
Clinical features:
- Primary infection with *C. trachomatis*
Laboratory findings:
- CRP ↑
- leucocyte counts ↑
- erythrocyte sedimentation rate ↑



Patient No.: 12777
Clinical features:
- further course of disease:
- tumor regression
- patent tubes
- 3 years later delivery

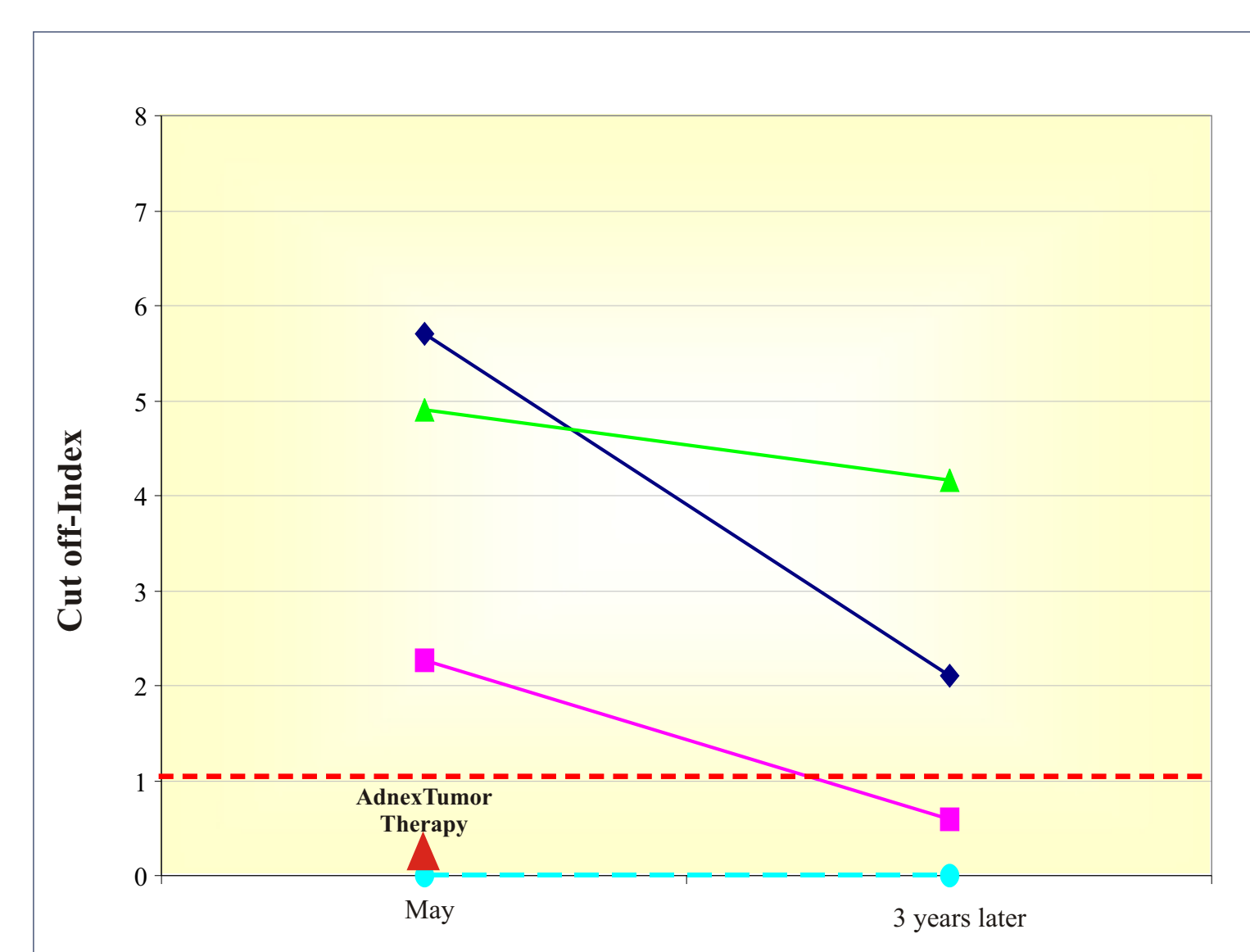


Fig. 4b: Acute infection → chronic infection

Patient No.: 14119
Clinical features:
- reinfection
- PID
Laboratory findings:
- CRP ↑
- erythrocyte sedimentation rate ↑
- leucocyte counts normal

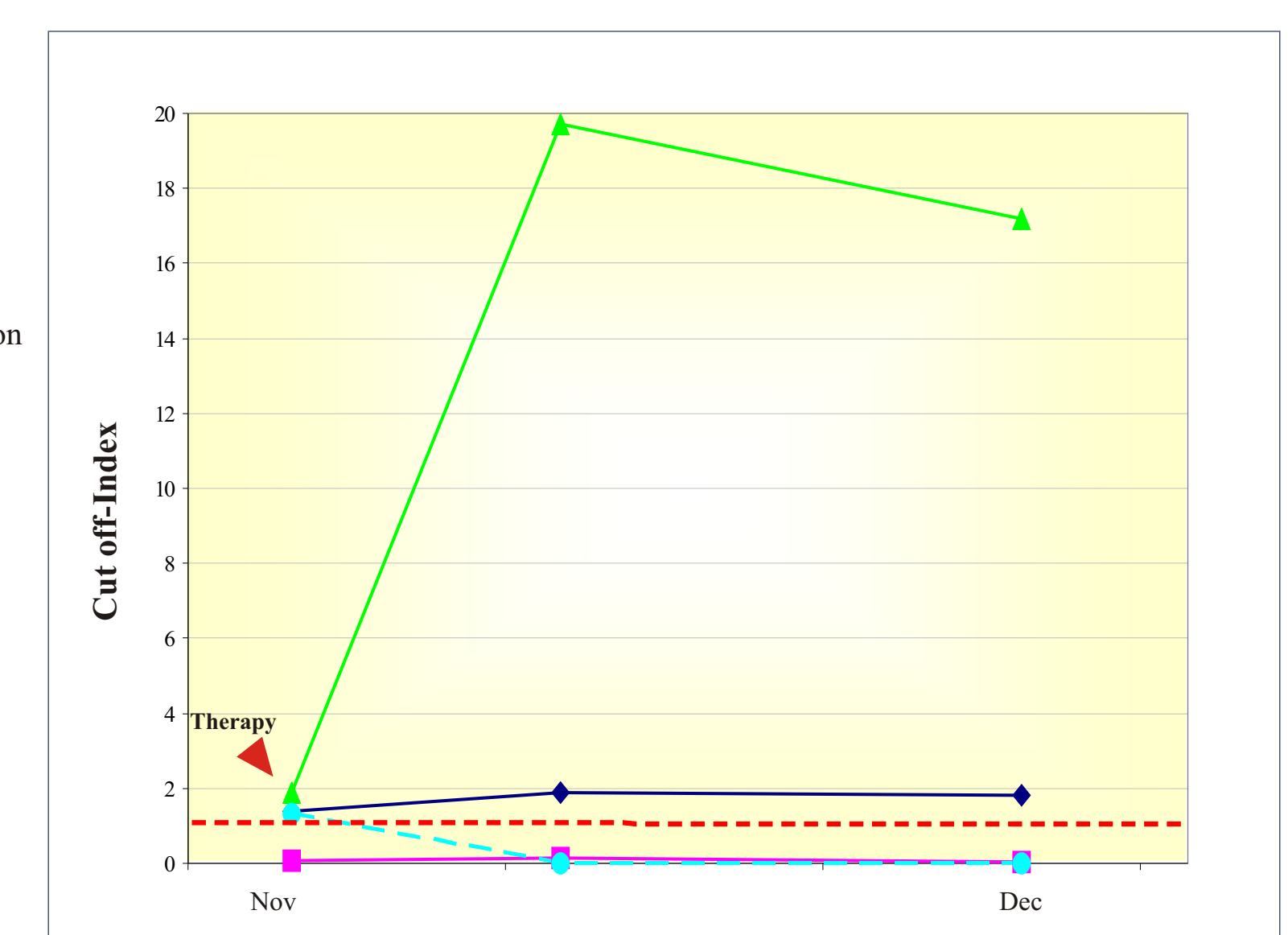


Fig. 5: Chronic infection due to *C. trachomatis*

Discussion and Conclusion

- Extended *C. trachomatis* serology, i. e. inclusion of cHSP60 IgG, seems to supply additional information about the course and progress of genital chlamydial infections.
- Long-term follow-up of patients with proven *C. trachomatis* infections is essential to be able to better correlate serological markers with tubal damage.
- This kind of follow-up study (clinically and serologically) is ongoing.