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Chlamydia trachomatis in outpatients in North Rhine-Westphalia, Germany: Five years retrospective study (2015-2019)

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BACKGROUND

Chlamydia trachomatis (CT) is an obligate intracellular gram-negative bacterium causing one of the most common sexually transmitted bacterial infections (STIs) in Europe [1].

Untreated CT infections were previously associated with an increased risk of infertility and spontaneous abortions among other complications [2,3].

The early stages of CT infection are easily treated with antibiotics, so early detection and regular screenings are important aspects of public health care [4,5].

OBJECTIVES

We determined percentages of infections and epidemiological variables in female (pregnant, non-pregnant) and male outpatients in North Rhine-Westphalia, Germany from January 2015 to December 2019

MATERIAL & METHODS

Retrospective study:

86934 clinical specimens from 86828 outpatients were collected.

30378 urine samples, 56517 urogenital swabs and 38 semen samples were tested with CT/NG assay on the m2000 PCR Real-time system (both from Abbott Molecular, Des Plaines, USA; qualitative assay: positive, negative, equivocal).

Demographic and clinical data of the patients (sex, age and pregnancy) were obtained from the Laboratory Information System (MOLIS version 4.40).

Positive results from the same patient within 15 days were considered as the same infection, only included once.

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RESULTS

81174 (93.4%) clinical samples from women (33603 pregnant (41.4% of women)).

5760 (6.6%) clinical samples from men.

Statistically significantly more CT-positive specimens from men than from women ($p < 0.05$, **Fig.1**):
men: n=682, 11.8%
non-pregnant women: n=1773, 3.7%
pregnant women: n=720, 2.1%

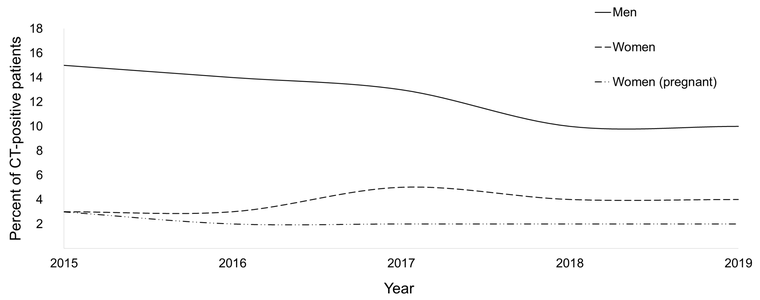

Fig. 1: Percentage of CT-positive patients from 2015-2019.

Average age of CT-positive pregnant women 24.9 years, 24.2 years for non-pregnant women and 28.6 years for men.

Highest rate of positive results in women and men found in the group aged 20-39 years (81.9% of pregnant women, n=590; 72.0% of non-pregnant women, n=1277; 81.1% of men, n=553; **Fig. 2A/B**).

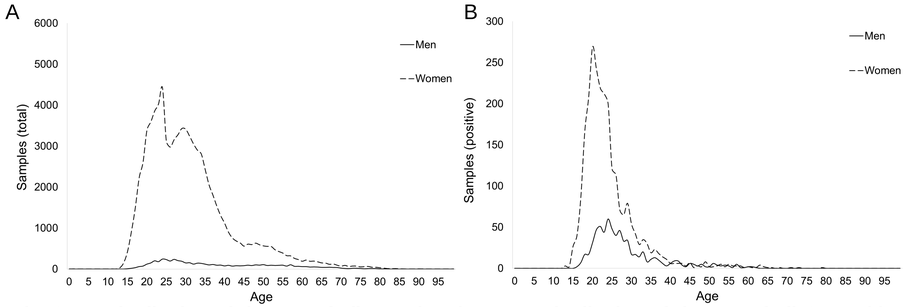

Fig. 2: A: Distribution of the age of all tested patients. B: Distribution of the age of all CT-positive patients.

RESULTS

Of the 720 pregnant women, 298 had a registered gestational age. Of these 298 CT-positive pregnant women 198 (66.4%) were in the first trimester of pregnancy. (**Fig. 3).**

Of all positive specimens, 8.6% ((n=272); 8.5% of positive non-pregnant women, n=150; 11.3% of positive pregnant women, n=81; 6.0% of positive men, n=41) showed a second positive results after more than 15 days after the first positive result (**Fig. 4**).

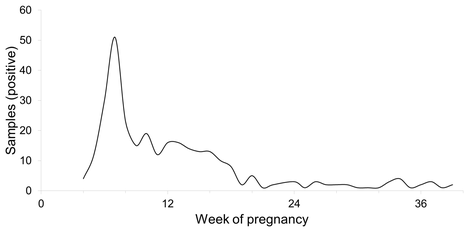

Fig. 3: Age of pregnancy of CT-positive pregnant women.

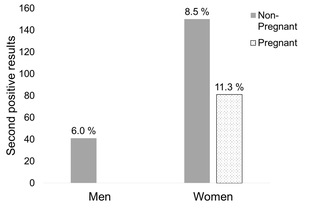

Fig. 4: Patients with multiple positive results.

SUMMARY / CONCLUSIONS

Unlike the tests carried out on women (“screening for women under 25 years" and the "screening during pregnancy" or for the presence of symptoms) in men there was a higher percentage of positive CT-PCRs, probably due to the CT-PCR being based on a specific suspicion of infection or clearly originating in symptomatic patients [6,7].

Most CT-positive patients were between the age 20 to 39 years. Most people in this age group are sexually active, which is an increased risk of exposure to CT [1].

Despite the little data obtained from our registries regarding the gestational age of pregnant women, most of the CT-positive pregnant patients were in the 1st trimester of pregnancy when tested as CT-screenings are part of maternal healthcare to aid early detection and prevent miscarriages [2,6].

Between 6% and 11.3% of patients showed a second positive results at least 15 days after their first diagnosis, most likely due to a persisting infection, incorrect treatment, an acquired antibiotic resistance of the CT strain or reinfection with CT [8].

An early detection of CT in asymptomatic and symptomatic patients in the age groups with a sexually active life would be necessary to reduce transmission and complications caused by this microorganism. Additionally, we recommend a control CT-PCR after therapy to detect persistent infections and reinfections.