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**ТИББИЁТДА ЯНГИ КУН
НОВЫЙ ДЕНЬ В МЕДИЦИНЕ
NEW DAY IN MEDICINE**

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www.bsmi.uz
https://newdaymedicine.com E:
ndmuz@mail.ru
Тел: +99890 8061882

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THE SEROLOGICAL AND MOLECULAR-BIOLOGICAL MARKERS OF CYTOMEGALOVIRUS INFECTION IN WOMEN IN BAKU CITY

Zamina Niyazi Huseynova <https://orcid.org/0009-0004-0127-0050>

E-mail: zaminahuseynova2016@gmail.com

Azerbaijan Medical University Azarbaijan Baku, Bakikhanov str., 23

tel: +994 (12) 597-38-98 www.amu.edu.az

✓ Rezyume

At present time the problem of cytomegalovirus infection (CMVI) has a high interest. The necessity of studying of CMVI have been called with their widley spreading and with those that cytomegalovirus is able to caused the different in ne wborns and children, whose mothers have been sicked with CMVI during pregnancy.

The aim of investigation is to study the seroepidemiological peculiarities of CMVI in women in Baku city.

With according in 2018 year on the base of the clinical epidemiology laboratory of Azerbaijan Medical University the patients for CMVI have been observed. The middle age of women were $42,5 \pm 2,7$ years old.

In order to laboratory diagnostic of CMVI the immunosorbent assay method (IFA) and the polymerase chain reaction (PCR) have been used.

It was determined that from 173 patients with pozitiv CMV antigen the 45 has the gynecological pathologies (26,0%).

At women an acute cytomegalovirus infection have been diagnosed in 26,0% of cases and most appearance have been detected in the age group 40-49 (28,6%). The cytomegalovirus infection at women have been appeared in association with HSV I (2,9%) and HSV II (5,2%) types of cases in acute, latent and reactivated forms.

Key words: Cytomegalovirus infection, the immunosorbent assay method, the polymerase chain reaction, women.

СЕРОЛОГИЧЕСКИЕ И МОЛЕКУЛЯРНО-БИОЛОГИЧЕСКИЕ МАРКЕРЫ ЦИТОМЕГАЛОВИРУСНОЙ ИНФЕКЦИИ У ЖЕНЩИН В Г.БАКУ

З.Н. Гусейнова

Азербайджанский Медицинский Университет Азарбайджан г. Баку, ул. Бакиханова, 23

тел: +994 (12) 597-38-98 www.amu.edu.az

✓ Резюме

В настоящее время проблема цитомегаловирусной инфекции (ЦМВИ) сохраняет высокую актуальность. Необходимость изучения ЦМВИ обусловлена ее широким распространением и тем, что цитомегаловирус (ЦМВ) способен вызвать различные нарушения у новорожденных и детей, матери которых перенесли ЦМВИ во время беременности.

Цель исследования – изучить некоторые сероэпидемиологические особенности цитомегаловирусной инфекции у женщин в г.Баку.

С учетом поставленных задач в 2018 году на базе клинической эпидемиологической лаборатории Азербайджанского Медицинского Университета было проведено обследование пациенток с подозрением на ЦМВИ.

Средний возраст больных был $42,5 \pm 2,7$ года.

Для лабораторной диагностики ЦМВИ использовали иммуноферментный анализ и полимеразную цепную реакцию.

Установлено, что при наличии антигена цитомегаловируса из 173 пациенток у 45 имела гинекологическая патология (26,0%). У женщин острая цитомегаловирусная инфекция диагностировалась в 26,0 случае и больше определялась в возрастной группе 40-49 лет (28,6%). У женщин острая цитомегаловирусная инфекция встречалась в ассоциации с ВПГ I типа в 2,9% случаев, с ВПГ II типа – 5,2%.

Ключевые слова: Цитомегаловирусная инфекция, иммуноферментный анализ, полимеразная цепная реакция, женщины.

AYOLLARDA SITOMEGALOVIRUS INFEKTSIYALARINING SEROLOGIK VA MOLEKULAR-BIOLOGIK MARKERLARI BOKU.

Z.N. Guseynova

Ozarbayjon tibbiyot universiteti Ozarbayjon Boku, Bakixanov ko'chasi, 23 tel: +994 (12) 597-38-98 www.amu.edu.az

✓ Rezyume

Hozirgi vaqtda sitomegalovirus infeksiyasi (CMV) muammosi juda dolzarb bo'lib qolmoqda. CMVni o'rganish zarurati uning keng tarqalishi va sitomegalovirus (CMV) yangi tug'ilgan chaqaloqlarda va homiladorlik davrida onalarida CMV bo'lgan bolalarda turli xil kasalliklarga olib kelishi mumkinligi bilan bog'liq.

Tadqiqotning maqsadi Boku shahridagi ayollarda sitomegalovirus infeksiyasining ayrim seroepidemiologik xususiyatlarini o'rganishdir. Belgilangan vazifalarni inobatga olgan holda, 2018 yilda Ozarbayjon tibbiyot universitetining klinik epidemiologik laboratoriyasida CMVga shubha qilingan bemorlarning so'rovi o'tkazildi.

Bemorlarning o'rtacha yoshi $42,5 \pm 2,7$ yoshni tashkil etdi.

CMV ning laboratoriya diagnostikasi uchun ferment immunoassay va polimeraza zanjiri reaksiyasi ishlatilgan.

Sitomegalovirus antijeni mavjudligida 173 nafar bemordan 45 nafarida ginekologik patologiya (26,0%) borligi aniqlandi. Ayollarda o'tkir sitomegalovirus infeksiyasi 26,0 holatda tashxis qo'yilgan va ko'proq 40-49 yosh guruhida (28,6%) aniqlangan. Ayollarda o'tkir sitomegalovirus infeksiyasi HSV I turi bilan bog'liq holda 2,9% hollarda, HSV II turi bilan - 5,2% hollarda topilgan.

Kalit so'zlar: Sitomegalovirus infeksiyasi, ferment immunoassay, polimeraza zanjiri reaksiyasi, ayollar.

Relevance

Currently, the problem of cytomegalovirus infection (CMV) remains highly relevant [1, 5, 9]. The need to study CMV is due to its widespread prevalence and the fact that cytomegalovirus (CMV) can cause various disorders in newborns and children whose mothers had CMV during pregnancy [11, 12, 15].

The growing relevance of cytomegalovirus infection (CMV) in clinical medicine is due, first of all, to the widespread distribution and frequency of infection in people [4, 8, 14].

Cytomegalovirus infection occupies one of the leading places in the structure of perinatal mortality, being the cause of death in 37.5% of deceased newborns. According to epidemiological data, most people are infected with cytomegalovirus during their lives. CMV is one of the most common intrauterine infections [1, 2, 6, 13]. The study of the significance of cytomegalovirus in the pathology of pregnancy in women is of particular relevance [3, 7, 10].

The aim of the study is to study some seroepidemiological features of cytomegalovirus infection in women in Baku.

Material and methods

Taking into account the objectives set, in 2018, patients with suspected CMV infection were examined at the clinical epidemiological laboratory of the Azerbaijan Medical University.

The average age of patients was 42.5 ± 2.7 years.

For laboratory diagnostics of CMV, enzyme immunoassay and polymerase chain reaction were used.

Statistical processing of the obtained results.

The study is classified: by design - epidemiological, by method - observational, by volume - selective, by type - scientific. By material - prospective, by time - cross-sectional, by place - clinical study. The obtained data were subjected to statistical processing by discriminant analysis methods. To analyze the qualitative characteristics in the studied groups, 2×2 and $2 \times n$ cross-tables were previously compiled. The statistical significance of the differences was assessed using the χ^2 – Pearson and Fisher criteria. All calculations were performed on the EXCEL-2013 and SPSS-20 spreadsheets.

Results and their discussion.

The results of determining the frequency of CMV infection in women in different age groups are shown in Table 1.

Table 1. Frequency of CMV infection in women in different age groups

Age Groups	Surveyed	Positive	%
Up to 30 years	97	25	23,7
39-39 years	45	12	26,7
49-49 years	14	4	28,6
50 years and older	17	4	28,5
Total:	173	45	26,0

As can be seen from Table 1, the frequency of CMV detection in women in the age group up to 30 years was 23.7%, in the age group 30-39 years – 26.7%, in the age group 40-49 years – 28.6% and in the age group 50 years and older – 28.5%. Analysis of the results of determining serological markers of acute CMV in women established that specific antibodies of class M were detected in the age group up to 30 years in 25 women (23.7%), in the age group 30-39 years in 12 patients (26.7%), in the age group 40-49 years and older than 50 years in 4 women (28.6% and 28.5%, respectively). The detection of specific antibodies of class G also varied depending on the age of the patients. Thus, the highest percentage of detection of class G antibodies was also in the age group of 40-49 years (64.3%).

The results of the molecular biological examination (PCR) of women for acute cytomegalovirus infection depending on age groups are reflected in Table 2.

Table 2. Results of PCR examination of women for acute CMV infection in various age groups

Age groups	Examined	CMV DNA in blood	%
Up to 30 years	97	23	23,7
39-39 years	45	10	22,2
49-49 years	14	3	21,4
50 years and older	17	4	23,5
Total:	173	40	23,1

Table 2 shows that CMV DNA in the blood of women under 30 years of age was detected in 23 women (23.7%). The detection rate of the molecular biological marker, i.e. CMV DNA in the blood of women aged 30-39 years was 22.2% (in 10 women), and in the age group 40-49 years 21.4% (in 3 patients).

Overall, the frequency of detection of CMV DNA in the blood of women by PCR was 23.1%.

The frequency of detection of mixed acute CMV in women in different age groups was studied in the course of the research. Table 3 shows the frequency of occurrence of mixed CMV in women depending on age.

Table 3. Frequency of occurrence of mixed CMV in women in different age groups

Age groups	Examined	CMVI+HSV-I	%	CMVI+HSV-II	%
Up to 30 years	97	–	–	–	–
39-39 years	45	3	6,7	6	13,3
49-49 years	14	2	14,3	3	21,4
50 years and older	17	–	–	–	–
Total:	173	5	2,19	9	5,2

As can be seen from Table 3, CMV in association with HSV-I type was found in women in the age group of 30-39 years (6.7%), and in HSV-II type in women in the age group of 30-39 years (13.3%) and in the age group of 40-49 years (21.4%).

Table 4. Proportion of patients by detection of CMV markers (n=173)

CMV marker	Absolute number	%
CMV DNA in blood	40	23,1
Anti-CMV IgG in blood	83	47,9
Anti-CMV IgM in blood	45	26,0
Anti-CMV IgG (avidity)	47	27,2
Anti-CMV IgM (avidity)	45	26,0

When analyzing the data to identify CMV markers, the highest frequency of detection of anti-CMV IgG was 83 (47.9%) cases. Anti-CMV IgM were detected in 45 (26.0%) women. The avidity of anti-CMV IgG was 27.2%, anti-CMV IgM 26.0%. Detection of class G antibodies to CMV indicated both infection and the presence of specific antiviral immunity in most cases. Detection of class M antibodies together with IgG was one of the signs of reactivity of this viral infection.

Conclusions

1. It was found that acute cytomegalovirus infection is diagnosed in 26.0% of cases in women. In women, cytomegalovirus infection is more often detected in the age group of 40-49 years (28.6%).
2. In women, serological and molecular biological markers of acute cytomegalovirus infection mainly correlate with each other.
3. In women, acute cytomegalovirus infection occurs in association with HSV types I and II (2.19% and 5.2%, respectively).

Written informed consent was obtained from patients for the publication of this article.

The author declares no conflict of interest.

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