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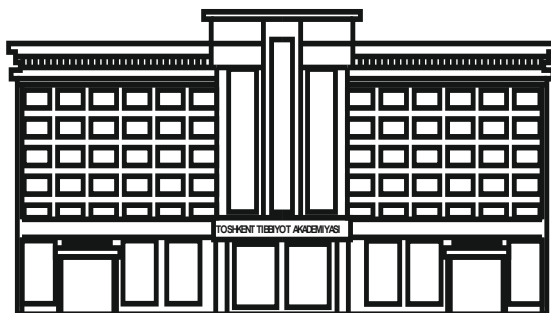


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O'ZBEKISTON  
TIBBIYOT  
AXBOROTNOMASI



МЕДИЦИНСКИЙ  
ВЕСТНИК УЗБЕКИСТАНА

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## REVMATOID ARTRITDA ANTI-CARP VA VEGF MARKERLARI: ERTA TASHXISLASH VA PROGNOZLASH IMKONIYATLARI

Miraxmedova X.T., Raximova M.R.

## АНТИ-CARP И VEGF МАРКЕРЫ ПРИ РЕВМАТОИДНОМ АРТРИТЕ: ВОЗМОЖНОСТИ РАННЕЙ ДИАГНОСТИКИ И ПРОГНОЗИРОВАНИЯ

Мирахмедова Х.Т., Рахимова М.Р.

## ANTI-CARP AND VEGF MARKERS IN RHEUMATOID ARTHRITIS: OPPORTUNITIES FOR EARLY DIAGNOSIS AND PROGNOSTICATION

Mirakhmedova Kh.T., Rakhimova M.R.

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**Цель:** определение диагностического и прогностического значения иммунологических маркеров у больных с ранними стадиями ревматоидного артрита. **Материал и методы:** исследование, проведенное на базе ревматологического отделения многопрофильной клиники Ташкентского государственного медицинского университета, включало 100 участников: 80 пациентов с ревматоидным артритом и 20 здоровых лиц (контрольная группа). Клинические, биохимические и инструментальные данные были подвергнуты статистическому анализу. **Результаты:** для VEGF AUC = 0,89, чувствительность = 70%, PPV = 100%; для Anti-CarP AUC = 0,78, чувствительность = 52%, PPV = 100%. Уровни обоих маркеров достоверно выше, чем у здоровых лиц ( $p < 0,001$ ). У пациентов с положительными значениями обоих маркеров показатели деструкции по шкалам Sharp и Larsen были почти в 2 раза выше, что подтверждает их клиническую значимость в прогнозировании костной деструкции. **Выводы:** полученные результаты подтверждают, что данные биомаркеры имеют не только диагностическую, но и прогностическую ценность, особенно в оценке деструктивных изменений и у серонегативных больных.

**Ключевые слова:** ревматоидный артрит, биомаркеры, Anti-CarP, VEGF.

**Objective:** To determine the diagnostic and prognostic significance of immunological markers in the early stages of rheumatoid arthritis. **Material and methods:** The study was conducted at the Rheumatology Department of the Multidisciplinary Clinic of Tashkent State Medical University. A total of 100 participants were enrolled: 80 patients with rheumatoid arthritis and 20 healthy individuals as the control group. Clinical, biochemical, and instrumental data were subjected to statistical analysis. **Results:** For VEGF, AUC = 0.89, sensitivity = 70%, PPV = 100%; for Anti-CarP, AUC = 0.78, sensitivity = 52%, PPV = 100%. The levels of both biomarkers were significantly higher compared to healthy controls ( $p < 0.001$ ). In biomarker-positive patients, Sharp and Larsen destruction scores were nearly two-fold higher, demonstrating their clinical significance in predicting bone destruction. **Conclusion:** These findings confirm that Anti-CarP and VEGF biomarkers are valuable not only for diagnosis but also for prognosis, assessment of joint destruction, and particularly for clinical utility in seronegative rheumatoid arthritis groups.

**Key words:** rheumatoid arthritis, biomarkers, Anti-CarP, VEGF.

Rевматoid artrit (RA) – bu surunkali, tizimli autoimmun kasallik bo'lib, asosan sinovial bo'g'imlarni shikastlaydi va vaqt o'tishi bilan bo'g'im deformatsiyasi, suyak eroziyasi hamda funksional nogironlikka olib keladi. Kasallik dunyo bo'yicha aholi orasida 0,5-1% tarqalgan bo'lib, ayollar erkaklarga nisbatan 2-3 barobar ko'proq kasallanishadi [1]. RAning erta aniqlanishi va davolashni tez boshlash bo'g'im destruksiysiyasi va nogironlikni oldini olishda muhim ahamiyatga ega [8].

RA tashxisida hozirgi kunda keng qo'llanilayotgan serologik markerlar – revmatoid omil (RO) va anti-sitruulinlangan oqsillarga qarshi antitanalar (ACPA) hisoblanadi. RO IgG immunoglobulinining Fc fragmentiga qarshi antitachasi bo'lib, RA bemorlarining 70-80%ida aniqlanadi, biroq uning spesifikligi past bo'lib, boshqa surunkali yallig'lanishli kasalliklarda ham uchraydi [4,8]. ACPA esa RA uchun yuqori spesifiklikka ega bo'lib, kasallikning erta bosqichlarida aniqlanishi mumkin [10]. ACPA mavjudligi RAning og'ir kechishi va bo'g'im destruksiysiyasi bilan bog'liq deb hisoblanadi [10].

So'nggi yillarda anti-karbamillangan oqsillarga qarshi antitanalar (anti-CarP) RA diagnostikasida va prognozida yangi biomarker sifatida e'tiborni tortmoqda. Tadqiqotlar shuni ko'rsatadiki, anti-CarP antitanalar RO va ACPA manfiy bo'lgan bemorlarda ham aniqlanib, ularning mavjudligi bo'g'im destruksiysiyasi xavfini oshiradi [7,9]. Bu esa anti-CarPni seronegativ RA bemorlarini aniqlashda muhim marker sifatida ko'rsatadi.

Bundan tashqari, tomir endotelial o'sish omili (VEGF) RA patogenezida muhim rol o'ynaydi. VEGF angiogenezni rag'batlantirib, sinovial to'qimalarning gipervaskulyarizatsiyasiga olib keladi. Tadqiqotlar VEGF darajasining RA bemorlarida yallig'lanish darajasi va bo'g'im destruksiysiyasi bilan ijobiy korrelyatsiyasini ko'rsatmoqda [2,3].

Shuningdek, RA patogenezida turli immun hujayralar va sitokinlar, jumladan, IL-17A, TNF- $\alpha$  va IL-6 muhim rol o'ynaydi. Bu sitokinlar sinovial yallig'lanishni kuchaytiradi, osteoklastlarni faollashtiradi va suyak eroziyasiga olib keladi [5].

RAning erta bosqichida rentgenologik o'zgarishlar hali rivojlanmagan bo'lishi mumkin, bu esa kasallikni aniqlashni qiyinlashtiradi. Shu sababli, yangi biomarkerlar, xususan, anti-CarP va VEGFni o'rganish, RAning erta diagnostikasi va prognoz bahosini yaxshilashda muhim ahamiyatga ega [6].

Tadqiqotning maqsadi: revmatoid artritning erta bosqichlarida tashxislash va kasallik kechishini prognozlashda anti – Carp va VEGF biomarkerlarining diagnostik va prognostik ahamiyatini aniqlash.

### Material va usullar

Tadqiqot 2023-2024 yillar davomida Toshkent tibbiyot akademiyasi ko'p tarmoqli klinikasining revmatologiya bo'limi hamda 1-son Ichki kasalliklar propedeutikasi kafedrasida olib borildi.

Umumiy 100 nafar ishtirokchi jalb etildi: 40 nafar erta revmatoid tashxisi qo'yilgan bemorlar, 40 nafar ifodalangan bosqichdagi RA tashxisli bemorlar, 20 nafar sog'lom

shaxslardan iborat nazorat guruhi. Erta RA guruhiga kasallik davomiyligi 12 oydan kam bo'lgan bemorlar kiritilgan bo'lib, ular RO va ACPA bo'yicha seropozitiv (1A-guruh) va seronegativ (1B-guruh) kichik guruhlariga ajratildi. Xuddi shunday, ifodalangan RA guruhidagi bemorlar ham seropozitiv (2A) va seronegativ (2B) kichik guruhlariga ajratildi. Barcha bemorlarga 2010-yilgi ACR/EULAR diagnostik mezonlari asosida tashxis qo'yildi. Klinik faollik DAS28 indeksi asosida baholandi, bunda shishgan va og'riqli bo'g'imlar soni, ECHT (eritrositlar cho'kish tezligi), bemorning o'z bahosi kiritildi. Shuningdek, har bir bemorning hayot sifatiga ta'sir darajasi HAQ anketasi yordamida o'lchandi.

Laborator tekshiruvlar quyidagi yo'nalishlarda o'tkazildi: Umumiy qon tahlili, ECHT, CRP, RO va ACPA (immunosubmetrik usulda). Anti-CarP va VEGF darajalari (ELISA usulida). Anti-CarP darajasi 0.5-100 U/mL oraliqda, VEGF esa 9-1000 pg/mL diapazonida baholandi. Ifodalangan RA guruhida suyak destruksiyasining prognozini baholash uchun Sharp va Larsen shkalalaridan foydalanildi. Sharp mezonida har bir qo'l va tirsak bo'g'imlarida eroziya va bo'g'imlararo bo'shliq torayishi ball berish asosida baholandi (maks. 448 ball). Larsen mezonida bo'g'imlarning rentgenografik holatiga 0 dan 5 gacha ball qo'yildi (maks. 100 ball).

Instrumental tekshiruvlar quyidagilarni o'z ichiga oldi: Qo'l, tirsak, bilak va tizza bo'g'imlarining rentgenografiyasi (old-orqa va yon proyeksiyada). Surunkali destruktiv o'zgarishlar, suyak eroziyasi, bo'g'im bo'shlig'i torayishi baholandi.

Statistik tahlil usullari: Statistik tahlil uchun SPSS 23.0 dasturi va Microsoft Excel 2016 paketidan foydalanildi.  $p < 0.05$  qiymati statistik jihatdan ishonchli deb qabul qilindi.

#### Natijalar

Tadqiqotda 1-guruh (erta RA) va 2-guruh (ifodalangan RA) bemorlarida klinik va laborator ko'rsatkichlarda sezilarli farqlar aniqlandi. Kasallik davomiyligi 2-guruhda ancha uzoq ( $24,3 \pm 5,8$  oy), 1-guruhda esa  $8,1 \pm 3,2$  oy bo'ldi.

Immunologik markerlardan Anti-CarP va VEGF darajalari 2-guruhda yuqori bo'lib, mos ravishda  $18,3 \pm 5,2$  ng/ml va  $528 \pm 88$  ng/mlni tashkil etdi (1-guruhda -  $11,8 \pm 3,6$  ng/ml va  $412 \pm 65$  ng/ml,  $p < 0,05$ ). Shuningdek, ECHT ( $44,5 \pm 8,3$  mm/soat) va CRP ( $24,7 \pm 6,5$  mg/L) ko'rsatkichlari ham II guruhda ishonchli yuqori qayd etildi.

Radiologik baholashda 2-guruh bemorlarida destruksiya darajasi yuqori bo'lib, Sharp indeksi -  $110 \pm 22$  ball, Larsen shkalasi -  $3,8 \pm 1,2$  ballni tashkil etdi. Bu natijalar Anti-CarP va VEGF biomarkerlarining suyak yemirilishini bashorat qilishdagi ahamiyatini ko'rsatadi (1-jadval).

1-jadval

1 va 2 guruhlarda asosiy ko'rsatkichlar bo'yicha o'rtacha natijalar

| Ko'rsatkichlar                   | Natijalar       |                  |
|----------------------------------|-----------------|------------------|
|                                  | 1-guruh         | 2-guruh          |
| Bemorlarning o'rtacha yoshi, yil | $38,2 \pm 1,5$  | $52,6 \pm 2,0$   |
| Kasallik davomiyligi, oy         | $8,1 \pm 3,2$   | $24,3 \pm 5,8$   |
| RO, IU/ml                        | $42,6 \pm 12,1$ | $69,4 \pm 16,8$  |
| ACPA, IU/ml                      | $63,2 \pm 18,5$ | $92,7 \pm 20,3$  |
| Anti-CarP, ng/ml                 | $11,8 \pm 3,6$  | $18,3 \pm 5,2^*$ |
| VEGF, ng/ml                      | $412 \pm 65$    | $528 \pm 88^*$   |
| DAS28                            | $4,8 \pm 0,9$   | $5,6 \pm 1,1$    |
| HAQ                              | $1,2 \pm 0,4$   | $1,9 \pm 0,5$    |
| ECHT, mm/soat                    | $28,2 \pm 6,1$  | $44,5 \pm 8,3^*$ |
| CRP, mg/L                        | $12,4 \pm 4,2$  | $24,7 \pm 6,5$   |
| Sharp indeksi, 2 guruh           | -               | $110 \pm 22^*$   |
| Larsen shkalasi, 2 guruh         | -               | $3,8 \pm 1,2^*$  |

Izoh. \* $p < 0,05$ .

Tadqiqot davomida erta RA bilan og'riqan bemorlarda anti-CarP va VEGF biomarkerlarining tashxisdagi ahamiyati baholandi. Baholash quyidagi kesimlarda olib borildi: Biomarkerlarning musbatlik chastotasi (cut-off bo'yicha)

Anti-CarP uchun cut-off = 10 ng/ml, VEGF uchun = 400 ng/ml qiymatlar asosida musbatlik aniqlanishi baholandi (2-jadval):

2-jadval

Biomarkerlarning musbatlik chastotasi

| Guruh           | Biomarker    | Musbat soni | Umumiy soni | Musbatlik, % |
|-----------------|--------------|-------------|-------------|--------------|
| Erta RA, n=40   | Anti-CarP    | 21          | 40          | 52           |
| Erta RA, n=40   | VEGF         | 28          | 40          | 70           |
| Sog'lom nazorat | Har ikkalasi | -           | 20          | -            |

Izoh. VEGF musbatlik chastotasi anti-CarP'ga qaraganda yuqoriroq bo'lib, bu markerning sezuvchanlik darajasi nisbatan kuchli ekanligini ko'rsatadi.

Tadqiqot doirasida sog'lom nazorat guruhidagi ishtirokchilarda yolg'on musbat holatlar qayd etilmadi (n=20), bu sharoitda spesifiklik 100% ni tashkil etdi.

Ammo bu ko'rsatkich katta populyatsiyada ehtiyotkorlik bilan talqin qilinishi lozim (3-jadval).

Bu ularning diagnostik kuchini dalillaydi (4-jadval).

3-jadval

**Sezuvchanlik, spesifiklik va diagnostik ko'rsatkichlar (2x2 jadval asosida), %**

| Ko'rsatkich                   | Anti-CarP | VEGF |
|-------------------------------|-----------|------|
| Sezuvchanlik (Sensitivity)    | 52        | 70   |
| Spesifiklik (Specificity)     | 100       | 100  |
| PPV (musbat bashorat qiymati) | 100       | 100  |
| NPV (manfiy bashorat qiymati) | 45        | 57   |
| Aniqlik (Accuracy)            | 66        | 79   |
| Odds Ratio                    | -         | -    |

Izoh. Har ikkala markerda PPV juda yuqori bo'lib, bu ularning RA tashxisini tasdiqlashdagi kuchli foydaliligini ko'rsatadi.

4-jadval

**Guruhlararo biomarker darajalari farqi (erta RA vs sog'lom)**

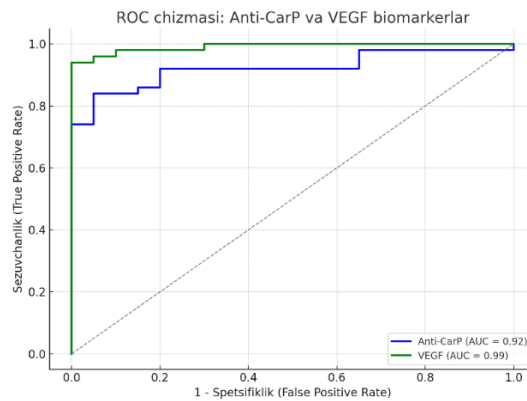
| Biomarker | Erta RA (M±SD) | Sog'lom (M±SD) | p-qiymat | Farq mavjudligi |
|-----------|----------------|----------------|----------|-----------------|
| Anti-CarP | 11.2±3.5       | 6.0±1.2        | <0.001   | Ha              |
| VEGF      | 435±45         | 300±40         | <0.001   | Ha              |

Izoh. Ikkala biomarker ham sog'lomlarga nisbatan erda RA bemorlarida ishonchli darajada yuqori aniqlangan (p<0.001).

VEGF biomarkeri "yuqori" darajadagi (AUC>0.85) diagnostik kuchga ega ekanligini, Anti-CarP esa "yaxshi" daraja-

da (AUC>0.7) aniqlik bilan RA tashxisida yordamchi marker sifatida ishlatilishi mumkinligini ko'rsatadi (rasm).

Suyak destruksiyasi darajasi biomarker musbat va manfiy guruhlar o'rtasida ishtatistik jihatdan ishonchli farq bilan ajraldi (5-jadval).



Rasm. ROC tahlil va AUC qiymatlari: Anti-CarP: AUC=0.78, VEGF: AUC=0.89.

5-jadval

**Biomarker darajalarining Sharp va Larsen ballari bilan bog'liqligi**

| Guruh          | Biomarker  | Destruksiya ko'rsatkichi | M±SD     | p-qiymat | Farq mavjudligi |
|----------------|------------|--------------------------|----------|----------|-----------------|
| Ifodalangan RA | Anti-CarP+ | Sharp shkalai            | 38.4±6.3 | <0.01    | Ha              |
| Ifodalangan RA | Anti-CarP- | Sharp shkalai            | 21.2±5.1 |          |                 |
| Ifodalangan RA | VEGF+      | Larsen shkalai           | 49.3±7.2 | <0.01    | Ha              |
| Ifodalangan RA | VEGF-      | Larsen shkalai           | 28.7±6.5 |          |                 |

Izoh. Har ikki biomarker musbat bemorlarda destruksiya ballari 2 baravarga yaqin yuqori bo'lib, bu ularning suyak yemirilishini bashorat qilishdagi klinik ahamiyatini ko'rsatadi.

## Xulosa

1. Anti-CarP va VEGF biomarkerlarining musbatligi, ifodalangan RA bosqichidagi bemorlarda Sharp va Larsen destruksiya ballarining yuqoriligiga ishtatistik ishonch bilan bog'liq bo'ldi.

2. VEGF va anti-CarP darajalari kasallik faolligi (DAS28) va funksional imkoniyat (HAQ) ko'rsatkichlari bilan mustahkam bog'liqlik ko'rsatdi ( $p < 0.05$ ).

3. Bu natijalar ushbu biomarkerlarning nafaqat diagnostik, balki prognoz qo'yishda, destruksiyani baholashda, va seronegativ RA guruhlarida klinik foydaliligini tasdiqlaydi.

## Adabiyotlar

1. Almutairi K et al. Epidemiology and classification criteria of rheumatoid arthritis: A review. *Cureus*.2021;13(1):e12549. <https://doi.org/10.7759/cureus.12549>

2. Angelotti F et al. Biomarkers and pathogenesis in rheumatoid arthritis: Role of angiogenesis and hypoxia. 2021; 2021: 6672723. <https://doi.org/10.1155/2021/6672723>

3. Kim YJ et al. Clinical significance of VEGF as a biomarker in rheumatoid arthritis patients. *Diagnostics*.2023;13(9):1653. <https://doi.org/10.3390/diagnostics13091653>

4. Kleyer A, Schett G. Arthritis and bone loss: A clinical review. *Bone*.2018;117:227-34. <https://doi.org/10.1016/j.bone.2018.09.007>

5. Li H et al. IL-17A and TNF- $\alpha$  synergy in rheumatoid arthritis pathogenesis. *Sign Transduct Target Ther*.2024;9(1):34. <https://doi.org/10.1038/s41392-023-01331-9>

6. Navarro-Millán I et al. Biomarkers in rheumatoid arthritis: A review on the pathogenesis and clinical utility. *Curr Rheumatol Rep*.2019;21(6):30. <https://doi.org/10.1007/s11926-019-0831-5>

7. Shi J et al. Anti-CarP antibodies as predictors of joint damage in rheumatoid arthritis. *Rheumatology International*, (2023). 43, 801–809. <https://doi.org/10.1007/s00296-023-05251-2>

8. Smolen JS et al. Rheumatoid arthritis. *Lancet*. 2020;

396 (10246): 1681-94. [https://doi.org/10.1016/S0140-6736\(20\)32323-5](https://doi.org/10.1016/S0140-6736(20)32323-5)

9. Watanabe A et al. Predictive value of anti-CarP and ACPA antibodies in early RA: A longitudinal cohort study. *BMC Musculoskeletal Dis*.2022;23(1):527. <https://doi.org/10.1186/s12891-022-05555-w>

10. Willemze A et al. The ACPA response in RA: Understanding its importance and diagnostic value. *Front Immunol*.2019;10:113. <https://doi.org/10.3389/fimmu.2019.01113>

## REVMATOID ARTRITDA ANTI-CARP VA VEGF MARKERLARI: ERTA TASHXISLASH VA PROGNOZLASH IMKONIYATLARI

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**Maqsad:** revmatoid artritning erta bosqichlarida tashxislash va kasallik kechishini prognozlashda immunologik markerlarining diagnostik va prognostik ahamiyatini aniqlash. **Material va usullar:** tadqiqot Toshkent davlat tibbiyot universiteti ko'p tarmoqli klinikasining revmatologiya bo'limida olib borildi. Tadqiqotga jami 100 nafar ishtirokchi jalb qilindi: 80 nafar revmatoid artritli bemorlar va 20 nafar sog'lom shaxsdan iborat nazorat guruhi. Klinik, biokimyoviy va instrumental tekshiruv natijalari statistik tahlil qilindi. **Natijalar:** VEGF uchun AUC=0.89, Sezuvchanlik = 70%, PPV=100%, Anti-CarP uchun AUC=0.78, Sezuvchanlik = 52%, PPV=100%, Ikkala biomarker darajasi sog'lomlarga nisbatan ishonchli yuqori ( $p < 0.001$ ). Har ikki biomarker musbat bemorlarda Sharp va Larsen destruksiya ballari 2 baravarga yaqin yuqori bo'lib, bu ularning suyak yemirilishini bashorat qilishdagi klinik ahamiyatini ko'rsatadi. **Xulosa:** bu natijalar ushbu biomarkerlarning nafaqat diagnostik, balki prognoz qo'yishda, destruksiyani baholashda, va seronegativ revmatoid artrit guruhlarida klinik foydaliligini tasdiqlaydi.

**Kalit so'zlar:** revmatoid artrit, biomarkerlar, Anti-CarP, VEGF.

## Mualliflar haqida ma'lumot

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