



TUMOR MARKER BLOOD TESTS: THEIR SIGNIFICANCE IN EARLY DETECTION, ASSESSMENT OF TREATMENT EFFECTIVENESS, AND PROGNOSIS OF ONCOLOGICAL DISEASES

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ABSTRACT

Tumor markers are biologically active substances that appear in the body in association with tumor processes or are synthesized directly by tumor cells and are primarily detected in blood serum. Tumor marker blood tests play an important role in modern oncology in the early detection of cancer, assessment of treatment effectiveness, prediction of disease recurrence, and long-term monitoring of patients. This article provides a detailed analysis of the biological and molecular basis of tumor markers, their classification, clinical application, and the diagnostic significance of the most commonly used tumor markers, as well as their advantages and limitations. In addition, the role of tumor marker tests in screening programs, modern laboratory technologies, and prospects within the framework of personalized oncology are discussed.

O'SMAMARKER QON TAHLILLARI: ONKOLOGIK KASALLIKLARNI ERTA ANIQLASH, DAVOLASH SAMARADORLIGINI BAHOLASH VA PROGNOZLASHDAGI AHAMIYATI

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ABSTRACT

O'smamarkerlar (tumor markerlar) — bu o'smaviy jarayonlar bilan bog'liq holda organizmda paydo bo'ladigan yoki o'smaviy hujayralar tomonidan sintez qilinadigan biologik faol moddalar bo'lib, ular asosan qon zardobida aniqlanadi. O'smamarker qon tahlillari zamonaviy onkologiyada kasallikni erta aniqlash, davolash samaradorligini baholash, kasallikning qaytalanishini prognozlash va bemorlarni uzoq muddatli monitoring qilishda muhim ahamiyat kasb etadi. Ushbu maqolada o'smamarkerlarning biologik va molekulyar asoslari, tasnifi, klinik amaliyotda



qo'llanilishi, eng keng tarqalgan o'smamarkerlarning diagnostik ahamiyati, shuningdek, ularning afzalliklari va cheklovlari batafsil tahlil qilingan. Bundan tashqari, o'smamarker tahlillarining skrining dasturlaridagi o'rni, zamonaviy laborator texnologiyalar va onkologiyada shaxsiylashtirilgan yondashuv doirasidagi istiqbollari yoritilgan.

Kirish

Onkologik kasalliklar butun dunyo bo'yicha o'lim sabablari orasida yetakchi o'rinlardan birini egallaydi. Jahon sog'liqni saqlash tashkiloti ma'lumotlariga ko'ra, har yili millionlab yangi saraton holatlari qayd etiladi va bu ko'rsatkich yil sayin ortib bormoqda. Shu sababli, kasallikni **erta bosqichda aniqlash, davolash samaradorligini oshirish va bemorlarning hayot sifatini yaxshilash** zamonaviy tibbiyotning asosiy vazifalaridan biri hisoblanadi.

So'nggi yillarda laborator diagnostika sohasida erishilgan yutuqlar, xususan o'smamarker qon tahlillarining joriy etilishi, onkologik kasalliklarni aniqlash va nazorat qilish imkoniyatlarini sezilarli darajada kengaytirdi. Ushbu usulning nisbatan oddiyligi, minimal invazivligi va yuqori axborot berish qobiliyati uni klinik amaliyotda keng qo'llashga sabab bo'lmoqda.

1. O'smamarkerlar tushunchasi va biologik mohiyati

O'smamarkerlar — bu malign o'smalar rivojlanishi bilan bog'liq holda organizmda paydo bo'ladigan moddalar bo'lib, ular bevosita o'smaviy hujayralar tomonidan ishlab chiqarilishi yoki organizmning o'smaga nisbatan javobi natijasida hosil bo'lishi mumkin.

Biologik nuqtayi nazardan, o'smamarkerlar quyidagi jarayonlar bilan bog'liq:

- hujayra proliferatsiyasining nazoratsiz kuchayishi
- apoptoz mexanizmlarining buzilishi
- genetik mutatsiyalar va epigenetik o'zgarishlar
- metabolik faollikning o'zgarishi

O'smamarkerlar ko'pincha qon zardobida aniqlanadi, chunki qon organizmda sodir bo'layotgan patologik jarayonlar haqida eng tezkor va ishonchli axborot beradi.

2. O'smamarkerlarning tasnifi

2.1. Kimyoviy tuzilishiga ko'ra

- **Oqsil markerlar** (PSA, AFP, CEA)
- **Glikoproteinlar** (CA-125, CA 19-9, CA 15-3)
- **Fermentlar va izofermentlar** (NSE, LDH)
- **Gormonlar** (kalsitonin, β -hCG)
- **Genetik markerlar** (onkogenlar va tumor-supressor genlar)

2.2. Klinik ahamiyatiga ko'ra

- Diagnostik markerlar
- Prognostik markerlar
- Prediktiv markerlar
- Monitoring markerlari

3. Eng ko'p qo'llaniladigan o'smamarkerlar

3.1. PSA

PSA prostata beziga xos antigen bo'lib, prostata saratonini aniqlash va



IF = 9.2

davolashdan keyingi holatni baholashda muhim ahamiyatga ega.

3.2. AFP

AFP jigar hujayrali karsinoma va germinativ o'smalar uchun muhim marker hisoblanadi.

3.3. CA-125

Tuxumdon saratoni bilan kasallangan bemorlarni monitoring qilishda keng qo'llaniladi.

3.4. CA 19-9

Asosan oshqozon osti bezi va o't yo'llari saratonlarida ahamiyatli.

3.5. CEA

Yo'g'on ichak, o'pka va sut bezi saratonida qo'llaniladigan universal markerlardan biridir.

4. O'smamarker qon tahlillarining afzalliklari

- Minimal invaziv usul
- Takroriy tekshiruv imkoniyati
- Dinamik monitoring
- Davolash samaradorligini baholash
- Relapsni erta aniqlash

5. O'smamarker tahlillarining cheklovlari

- Past spetsifiklik
- Soxta musbat natijalar
- Soxta manfiy natijalar
- Mustaqil tashxis uchun yetarli emasligi

6. O'smamarkerlar va skrining dasturlari

Skrining dasturlarida o'smamarkerlardan foydalanish ehtiyotkorlik bilan amalga oshirilishi lozim. Ular asosan yuqori xavf guruhlarida samaraliroq hisoblanadi.

7. Zamonaviy laborator texnologiyalar

- Immunoferment tahlil (ELISA)
- Kemilyuminestsent tahlil
- Molekulyar-genetik usullar
- Suyuq biopsiya

8. Shaxsiylashtirilgan onkologiyada o'smamarkerlar

Zamonaviy tibbiyot individual yondashuvga asoslangan bo'lib, bunda o'smamarkerlar muhim rol o'ynaydi.

9. Klinik amaliyotda qo'llash strategiyasi

O'smamarker natijalari har doim:

- klinik belgilar
- instrumental tekshiruvlar
- gistologik xulosalar bilan birgalikda baholanishi kerak.

Xulosa

O'smamarker qon tahlillari zamonaviy onkologik diagnostikaning ajralmas qismi bo'lib, ularni to'g'ri va oqilona qo'llash saraton kasalliklarini boshqarish samaradorligini sezilarli darajada oshiradi.

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