



OSHQOZONNING MORFOFUNKSIONAL HOLATINI O'RGANISHDA BIOKIMYOVIY USULLARNING QO'LLANILISHI

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Annotatsiya. Oshqozon ovqat hazm qilish tizimining markaziy organi sifatida nafaqat mexanik va kimyoviy ovqat parchalash jarayonlarida, balki umumiy homeostazni ta'minlashda ham muhim rol o'ynaydi. Uning morfofunktsional holati – shilliq qavati tuzilishi (morfoloqik komponent) va sekretsion, motor, himoya funksiyalari (funktsional komponent) o'zaro uzviy bog'liq bo'lib, ularning buzilishi surunkali gastrit, peptik yara kasalligi, funktsional dispepsiya, autoimmun gastrit, oshqozon adenokarsinomasi va MALT-limfoma kabi keng ko'lamli patologiyalarga olib keladi. Zamonaviy gastroenterologiyada oshqozon holatini baholashning invaziv (endoskopiya + biopsiya) va non-invaziv usullari parallel ravishda rivojlanmoqda. Biokimyoviy usullar esa aynan non-invaziv yondashuvning eng samarali shakli sifatida keng qo'llanilmoqda, chunki ular qon zardobi yoki nafas, najas kabi biologik materiallarda oshqozon shilliq qavati holatini aks ettiruvchi spesifik biomarkerlarni aniqlash imkonini beradi.

Kalit so'zlar: *Helicobacter pylori*, Gastrin-17, Pepsinogen I, Pepsinogen II.

Oshqozonning asosiy biokimyoviy markerlari va ularning patofiziologik ahamiyati

Pepsinogenlar oshqozonning bosh hujayralari (chief cells) va shilliq hosil qiluvchi hujayralar tomonidan sintezlanadigan pepsinning oldingi shakllaridir. Ularning qon zardobidagi konsentratsiyasi oshqozon shilliq qavati massasi va funktsional holatini bevosita aks ettiradi. Pepsinogen I faqat oshqozonning fundal va



korpus bo'limidagi oksintikbezlar hujayralarida hosil bo'ladi. Shuning uchun uning pasayishi ushbu hududlarda atrofik jarayonlarni ko'rsatadi. Pepsinogen II antral bo'lim, kardial bo'lim va hatto Brunner bezlarida ham sintezlanadi, shuning uchun uning darajasi butun oshqozon va o'n ikki barmoq ichak shilliq qavati holatiga bog'liq. PG I / PG II nisbati eng muhim diagnostik ko'rsatkichdir.

- Normal qiymat: $> 3,0$
- $\leq 3,0$ – korpus atrofik gastriti (sensivlik 89%, spesifiklik 92%)
- $\leq 2,0$ – og'ir atrofik gastrit va oshqozon saratoni xavfi yuqori (RR 6,7–12,4).

Pepsinogenlarning pasayishi oshqozon shilliq qavati massasining 30–50% yo'qolganini ko'rsatadi, bu esa Sidney klassifikatsiyasida C2–O3 darajadagi atrofik jarayonlarga mos keladi. Gastrin-17 antral bo'lim G-hujayralarining asosiy mahsuloti bo'lib, pariyetal hujayralarning HCl sekretsiyasini regulyatsiya qiladi. Uning qon zardobidagi darajasi oshqozon kislotaliligining bilvosita ko'rsatkichi hisoblanadi. Stimullangan gastrin-17 (proteinli ovqatdan 20 daqiqa o'tib o'lchanadi) eng aniq natija beradi.

- < 1 pmol/L – giperxloridriya (Zollinger-Ellison sindromi, duodenal yara)
- 10 pmol/L – hipoxloridriya yoki anxlorkidriya (atrofik gastrit, uzoq muddatli PPI qabul qilish)

Gastrin-17 darajasining oshishi, ayniqsa *H. pylori* pozitiv bemorlarda, enterochromaffin-like (ECL) hujayralar giperplaziyasi va tip I neyroendokrin o'smalar xavfini oshiradi. Xlorid kislota sekretsiyasining bilvosita ko'rsatkichlari

Ananaviy intragastral pH-metriya invaziv bo'lgani uchun hozirgi kunda quyidagi non-invaziv usullar qo'llaniladi: PepTest – og'iz so'lakidagi pepsin miqdorini aniqlash orqali gastroezofageal refluksni baholaydi. Serum chromogranin A – neyroendokrin hujayralar faolligini ko'rsatadi (atrofik gastritda oshadi).

Helicobacter pylori bilan bog'liq biomarkerlar



H. pylori infeksiyasi oshqozon shilliq qavati atrofiysining asosiy sababi hisoblanadi (Korrea kaskadi). Biokimyoviy diagnostika quyidagicha amalga oshiriladi:

- 13C-ureaz nafas testi – sensitivlik 95–98%, spesifiklik 97–99%.
- Fekal *H. pylori* antigeni – eradikatsiya samaradorligini baholashda eng ishonchli usul.
- Serologik IgG – o‘tmishdagi infeksiyani aniqlaydi, lekin faol infeksiyani farqlamaydi.

Kompleks biokimyoviy panellar: GastroPanel va uning klinik ahamiyati GastroPanel® (Biohit Oyj, Finlandiya) dunyoda eng keng qo‘llaniladigan serologik panel bo‘lib, quyidagi to‘rtta ko‘rsatkichdan iborat:

1. Pepsinogen I
2. Pepsinogen II
3. Gastrin-17 (stimullangan)
4. *H. pylori* IgG antikori

Maxsus algoritm yordamida natijalar quyidagi beshta klinik holatga tasniflanadi:

- Normal oshqozon shilliq qavati
- *H. pylori* assotsiirlanmagan sirt gastrit
- Antral atrofik gastrit
- Korpus atrofik gastrit
- Pangastrit (korpus + antrum atrofiysi)

Meta-tahlillar bo‘yicha GastroPanel ning oshqozon atrofik gastritini aniqlashdagi umumiy sensitivligi 85%, spesifikligi 89% ni tashkil etadi. Ushbu panel Yevropa gastroenterologiya qo‘llanmalarida (Maastricht VI, 2022) 50 yoshdan oshgan, dispepsiya shikoyatlari bor bemorlarda birlamchi skrining uchun tavsiya etiladi.

Oshqozon saratoni xavfini stratifikatsiyalashda biokimyoviy usullar



Oshqozon adenokarsinomasining 90% dan ortig‘i atrofik gastrit va intestinal metaplaziya zaminida rivojlanadi. Biokimyoviy markerlar yordamida saraton xavfini 10–15 yil oldin bashorat qilish mumkin:

- PG I < 30 μ g/L va PG I/PG II < 3,0 – oshqozon saratoni xavfi 8,7 baravar oshadi (Leja et al., Gut 2022).
- OLGA stagelari bilan korrelyatsiya:
 - PG I/PG II \leq 3,0 \rightarrow OLGA III–IV (sensivlik 78%)
- ABC metodi (Yaponiya va Janubiy Koreyada milliy skrining dasturi):
 - Guruh A: H. pylori (–), PG normal \rightarrow saraton xavfi 0,03%
 - Guruh B: H. pylori (+), PG normal \rightarrow xavf 0,12%
 - Guruh C: H. pylori (+), PG past \rightarrow xavf 0,87%
 - Guruh D: H. pylori (–), PG past \rightarrow xavf 1,54%

Xulosa

Oshqozonning morfofunktsional holatini biokimyoviy usullar yordamida baholash zamonaviy gastroenterologiyada inqilobiy yutuq bo‘ldi. Pepsinoqen I, pepsinoqen II, gastrin-17 va H. pylori markerlarining kombinatsiyasi (GastroPanel, ABC metodi) bemorlarni saraton xavfi darajasiga qarab stratifikatsiyalash, invaziv tekshiruvlarni 70–80% ga kamaytirish va oshqozon saratonini erta aniqlash imkonini beradi. Ushbu usullar xalqaro qo‘llanmalarda (ESGE, AGA, Maastricht VI) yuqori darajada tavsiya etilgan bo‘lib, kelajakda yangi biomarkerlar va sun‘iy intellekt integratsiyasi ularni yanada takomillashtiradi.

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