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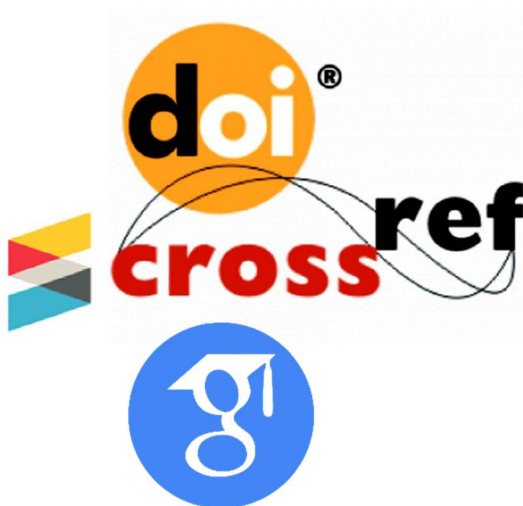
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БИОМЕДИЦИНА ВА АМАЛИЁТ ЖУРНАЛИ

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INDIVIDUALIZATION OF ART PROTOCOLS IN PATIENTS WITH DIFFERENT OVARIAN RESERVE

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ABSTRACT

Infertility remains one of the most important challenges in modern reproductive medicine and requires an individualized approach to improve the effectiveness of assisted reproductive technologies (ART). The aim of this study was to evaluate ART outcomes in patients with different ovarian reserve levels and to determine the role of personalized treatment protocols. This prospective study included 60 infertile women treated at the “Beshik” Reproductive Medicine Clinic (Samarkand, Uzbekistan) during 2025–2026. The participants were divided into two groups according to ovarian reserve: normal ovarian reserve (n=30) and diminished ovarian reserve (n=30). Ovarian reserve was assessed using anti-Müllerian hormone levels and antral follicle count, and all patients were additionally stratified according to the POSEIDON concept. Although patients with diminished ovarian reserve demonstrated lower numbers of retrieved oocytes and less favorable embryological outcomes, individualized ovarian stimulation protocols allowed satisfactory rates of oocyte maturation, fertilization, and blastocyst formation to be achieved. The findings indicate that personalization of ART protocols based on ovarian reserve assessment and POSEIDON stratification contributes to improved reproductive outcomes.

Keywords: infertility, assisted reproductive technologies, IVF, ICSI, ovarian reserve, AMH, POSEIDON, personalization

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ИНДИВИДУАЛИЗАЦИЯ ПРОТОКОЛОВ ВРТ У ПАЦИЕНТОК С РАЗЛИЧНЫМ ОВАРИАЛЬНЫМ РЕЗЕРВОМ

АННОТАЦИЯ

Бесплодие является одной из наиболее актуальных проблем современной репродуктивной медицины и требует индивидуализированного подхода для повышения эффективности вспомогательных репродуктивных технологий (ВРТ). Целью исследования явилась оценка результатов ВРТ у пациенток с различным овариальным резервом и определение значения

персонализации лечебных протоколов. В проспективное исследование, проведённое в клинике репродуктивной медицины «Beshik» (г. Самарканд) в 2025–2026 гг., были включены 60 женщин с бесплодием, разделённых на группы с нормальным ($n=30$) и сниженным ($n=30$) овариальным резервом. Оценка овариального резерва проводилась на основании уровня антимюллерова гормона и количества антральных фолликулов, а пациентки дополнительно стратифицировались согласно концепции POSEIDON. Несмотря на более низкие показатели количества полученных ооцитов и эмбриологических результатов у пациенток со сниженным овариальным резервом, применение индивидуально подобранных протоколов стимуляции позволило сохранить удовлетворительные показатели зрелости ооцитов, оплодотворения и формирования blastocyst. Полученные данные свидетельствуют о том, что персонализация программ ВРТ с учётом овариального резерва и критериев POSEIDON способствует улучшению репродуктивных результатов.

Ключевые слова: бесплодие, ВРТ, ЭКО, ИКСИ, овариальный резерв, АМГ, POSEIDON, персонализация

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TURLI OVARIAL REZERVGA EGA BEMORLARDA YRT PROTOKOLLARINI INDIVIDUALLASHTIRISH

ANNOTATSIYA

Bepushtlik zamonaviy reproduktiv tibbiyotning dolzarb muammolaridan biri bo'lib, yordamchi reproduktiv texnologiyalar (YRT) samaradorligini oshirish uchun individual yondashuvni talab qiladi. Tadqiqotning maqsadi turli ovarial rezervga ega bepushtlik bilan og'rigan ayollarda YRT natijalarini baholash va protokollarni individuallashtirishning ahamiyatini aniqlashdan iborat bo'ldi. Samarqand shahridagi "Beshik" reproduktiv tibbiyot klinikasida 2025–2026-yillarda o'tkazilgan prospektiv tadqiqotga 60 nafar ayol jalb qilinib, ular normal ovarial rezerv ($n=30$) va pasaygan ovarial rezerv ($n=30$) guruhlariga ajratildi. Ovarial rezerv anti-Müller gormoni va antral follikulalar soni asosida baholandi hamda bemorlar POSEIDON konsepsiyasi bo'yicha stratifikatsiya qilindi. Natijalarga ko'ra, pasaygan ovarial rezervli bemorlarda olingan oositlar soni va embriologik ko'rsatkichlar pastroq bo'lishiga qaramasdan, individual tanlangan stimulyatsiya protokollari MII oositlar ulushi, urug'lanish va blastotsista hosil bo'lish ko'rsatkichlarini qoniqarli darajada saqlash imkonini berdi. Olingan ma'lumotlar YRT dasturlarida ovarial rezerv va POSEIDON konsepsiyasiga asoslangan individual yondashuv reproduktiv natijalarni yaxshilashga xizmat qilishini ko'rsatdi.

Kalit so'zlar: bepushtlik, YRT, EKV, IKSI, ovarial rezerv, АМГ, POSEIDON, individualizatsiya.

Dolzarbliqi. Bepushtlik zamonaviy reproduktiv tibbiyotning eng dolzarb va murakkab muammolaridan biri bo'lib, nafaqat tibbiy, balki demografik, ijtimoiy va iqtisodiy ahamiyatga ham ega. Jahon sog'liqni saqlash tashkiloti (JSST) ma'lumotlariga ko'ra, bepushtlik reproduktiv tizim kasalligi sifatida ta'riflanadi va muntazam jinsiy hayot kechirayotgan hamda kontrasepsiya vositalaridan foydalanmayotgan juftliklarda 12 oy yoki undan ortiq muddat davomida homiladorlik yuzaga kelmasligi bilan tavsiflanadi [25]. So'nggi yillarda ushbu muammoning global miqyosda keng tarqalishi kuzatilmoqda. Meta-tahlillar natijalariga ko'ra, dunyo bo'ylab reproduktiv yoshdagi aholining 12,6–17,5% qismi bepushtlik bilan duch keladi, bu esa har olti kishidan birida reproduktiv salomatlik bilan bog'liq muammolar mavjudligini ko'rsatadi [12]. Hozirgi vaqtda dunyoda 48 milliondan ortiq juftlik va 186 milliondan ziyod shaxs bepushtlik muammosidan aziyat chekmoqda [12, 25].

Bepushtlikning tobora ortib borayotganligi uning nafaqat tibbiy, balki demografik xavfsizlik va aholi reproduktiv salohiyatini saqlash nuqtai nazaridan ham dolzarbligini oshirmoqda. Tug'ilish darajasining pasayishi, ayollarda reproduktiv yoshning kechikishi, surunkali somatik va ginekologik kasalliklarning ko'payishi, ekologik omillarning salbiy ta'siri hamda turmush tarzining o'zgarishi

reproduktiv salomatlikka jiddiy ta'sir ko'rsatmoqda [1, 2, 18]. Ayniqsa, rivojlangan va rivojlanayotgan mamlakatlarda ayollarning birinchi homiladorlik yoshining ortib borishi tuxumdonlar funksional zaxirasining kamayishi bilan bog'liq muammolarni yanada dolzarblashtirmoqda [13, 18].

O'zbekiston Respublikasida ham bepustlik sog'liqni saqlash tizimining muhim muammolaridan biri hisoblanadi. Mamlakatda reproduktiv salomatlikni muhofaza qilish bo'yicha qator davlat dasturlari amalga oshirilmoqda, yordamchi reproduktiv texnologiyalarni rivojlantirish va aholining ushbu xizmatlardan foydalanish imkoniyatlarini kengaytirishga alohida e'tibor qaratilmoqda [1, 2, 7]. Bepustlik bilan bog'liq muammolarning ortib borishi va reproduktiv yoshdagi aholining salomatligini yaxshilash zarurati ushbu yo'nalishda ilmiy tadqiqotlar olib borishning dolzarbligini belgilaydi.

So'nggi o'n yilliklarda yordamchi reproduktiv texnologiyalar (YRT) bepustlikni davolashning eng samarali usuli sifatida e'tirof etildi. Ekstrakorporal urug'lantirish (EKU) va intrasitoplazmatik spermatozoid inyeaksiyasi (IKSI) usullarining joriy etilishi millionlab juftliklarga ota-onalik baxtiga erishish imkonini berdi [5, 18]. Biroq klinik amaliyot natijalari shuni ko'rsatadiki, bir xil standart davolash protokollari barcha bemorlarda bir xil natija bermaydi. Shu sababli zamonaviy reproduktologiyada individualizatsiya va personalizatsiya konsepsiyalari alohida ahamiyat kasb etmoqda [9, 14].

YRT dasturlarini individuallashtirishning asosiy maqsadi har bir bemorning klinik, laborator va reproduktiv xususiyatlarini hisobga olgan holda eng maqbul davolash strategiyasini tanlashdan iborat. Personalizatsiyalangan yondashuv bemorning yoshi, tana vazni indeksi, bepustlik sababi, anti-Müller gormoni (AMG) darajasi, antral follikulalar soni (AFS), oldingi stimulyatsiya sikllariga javobi va boshqa klinik ko'rsatkichlarni baholashga asoslanadi [10, 17, 22]. Ushbu yondashuv nazorat qilinadigan ovarial stimulyatsiya protokolini, gonadotropinlarning boshlang'ich va umumiy dozalarini, ovulyatsiya triggerini tanlashni, urug'lantirish usulini (EKU yoki IKSI) hamda embrionlarni ko'chirish strategiyasini individuallashtirish imkonini beradi [14, 16, 21].

Bugungi kunda ovarial rezervni baholash reproduktologiyaning asosiy yo'nalishlaridan biri hisoblanadi. Ovarial rezerv ayolning reproduktiv salohiyatini aks ettiruvchi muhim biologik ko'rsatkich bo'lib, anti-Müller gormoni va antral follikulalar soni yordamida aniqlanadi [10, 22]. Tadqiqotlar AMG va AFS ko'rsatkichlari tuxumdonlarning stimulyatsiyaga javobini, olingan oositlar sonini, embrionlar sifatini hamda homiladorlik ehtimolini prognoz qilish imkonini berishini ko'rsatgan [10, 20, 22]. Shu sababli zamonaviy klinik tavsiyalarda ovarial rezerv ko'rsatkichlari asosida stimulyatsiya protokollarini tanlash tavsiya etiladi [16, 21].

Past prognostik guruhdagi bemorlarni aniqlash va ularda davolash natijalarini yaxshilash maqsadida POSEIDON (Patient-Oriented Strategies Encompassing Individualized Oocyte Number) konsepsiyasi ishlab chiqilgan [8, 15]. Ushbu tizim bemorlarni yoshi, ovarial rezerv ko'rsatkichlari va oldingi sikllardagi javobiga qarab guruhlariga ajratadi hamda individual davolash taktikasini tanlash imkonini beradi [11]. POSEIDON konsepsiyasining asosiy afzalligi shundaki, u nafaqat tuxumdonlarning javobini, balki har bir bemorda euploid embrion olish ehtimolini ham hisobga oladi [11, 15]. Bir qator tadqiqotlar individualizatsiyalangan yondashuv natijasida oositlar soni, sifatli embrionlar ulushi, klinik homiladorlik va tirik tug'ilish ko'rsatkichlari yaxshilanishini ko'rsatgan [9, 13, 20, 24].

ESHRE va ASRM tomonidan ishlab chiqilgan zamonaviy klinik tavsiyalarda ham individualizatsiyalangan nazorat qilinadigan ovarial stimulyatsiya reproduktiv natijalarni yaxshilashning muhim omili sifatida e'tirof etilgan [16, 21, 22]. Ayniqsa, ovarial rezervi pasaygan bemorlarda individual yondashuv gonadotropinlar sarfini optimallashtirish, samarasiz sikllar sonini kamaytirish va kumulyativ tirik tug'ilish ko'rsatkichlarini oshirish imkonini beradi [11, 20, 24].

Shunday qilib, turli ovarial rezervga ega bemorlarda YRT protokollarini individuallashtirish zamonaviy reproduktologiyaning eng istiqbolli va talab yuqori bo'lgan yo'nalishlaridan biri hisoblanadi. Ovarial rezervni kompleks baholash va POSEIDON konsepsiyasi asosida individual davolash strategiyasini qo'llash reproduktiv natijalarni yaxshilash, davolash samaradorligini oshirish va bepustlik muammosini hal etishda muhim ahamiyat kasb etadi.

Materiallar va usullar. Tadqiqot 2025-2026-yillarda Samarqand shahridagi “Beshik” reproduktiv tibbiyot klinikasi bazasida o‘tkazilgan prospektiv kuzatuv tadqiqoti sifatida amalga oshirildi. Tadqiqotning maqsadi turli ovarial rezervga ega bepushtlik bilan tashxislangan ayollarda yordamchi reproduktiv texnologiyalar (YRT) dasturlarining klinik va embriologik natijalarini baholash hamda protokollarni individuallashtirish zaruriyatini aniqlashdan iborat bo‘ldi. Tadqiqotga reproduktiv yoshdagi 60 nafar ayol kiritildi. Barcha bemorlarda bepushtlik davomiyligi kamida 2 yilni tashkil etgan hamda ular ekstrakorporal urug‘lantirish (EKU) yoki intrasitoplazmatik spermatozoid inyeaksiyasi (IKSI) dasturlariga tayyorlangan.

Tadqiqot ishtirokchilari ovarial rezerv ko‘rsatkichlariga qarab ikki guruhga taqsimlandi: 1-guruh (n=30) – normal ovarial rezervga ega bemorlar; 2-guruh (n=30) – pasaygan ovarial rezervga ega bemorlar.

Ovarial rezerv anti-Muller gormoni (AMG) darajasi va antral follikulalar soni (AFS) asosida baholandi. Normal ovarial rezerv AMG $\geq 1,2$ ng/ml va AFS ≥ 10 bo‘lgan bemorlarda qayd etildi. Pasaygan ovarial rezerv AMG $< 1,2$ ng/ml va/yoki AFS < 10 bo‘lgan hollarda tashxis qilindi. Bundan tashqari, bemorlar POSEIDON konsepsiyasi mezonlari asosida stratifikatsiya qilindi.

Tadqiqotga kiritish mezonlari quyidagilarni o‘z ichiga oldi: reproduktiv yoshdagi ayollar, kamida bir yil davom etgan bepushtlik, tuboperitoneal omil, endometriozi, polikistik tuxumdonlar sindromi, bachadon omili bilan bog‘liq bepushtlik hamda YRT dasturini o‘tkazishga rozilik bildirgan bemorlar. Tadqiqotdan chiqarish mezonlari sifatida malign neoplaziyalar, faol infeksiyon kasalliklar, donor oositlari yoki surrogat onalikni talab qiluvchi og‘ir reproduktiv patologiyalar, shuningdek tadqiqotda ishtirok etishdan bosh tortgan bemorlar belgilandi.

Barcha bemorlarda umumiy klinik tekshiruv, ginekologik ko‘rik, transvaginal ultratovush tekshiruvi, gormonal profilni aniqlash (FSG, LG, estradiol, prolaktin, AMG), antral follikulalar sonini baholash hamda erkak omilini istisno qilish maqsadida spermogramma tekshiruvi o‘tkazildi.

Nazorat qilinadigan ovarial stimulyatsiya protokollari bemorlarning yoshi, tana vazni indeksi, ovarial rezerv holati va POSEIDON guruhiga mansubligidan kelib chiqib individual ravishda tanlandi. Gonadotropinlarning boshlang‘ich va umumiy dozasi har bir bemor uchun alohida hisoblandi. Ovulyatsiya triggeri sifatida xorionik gonadotropin, gonadotropin-rilizing gormoni agonisti yoki dual-trigger sxemalaridan foydalanildi. Tadqiqot davomida olingan oositlar soni, metafaza-II bosqichidagi oositlar ulushi, urug‘lanish ko‘rsatkichi, blastotsista hosil bo‘lish chastotasi, yuqori sifatli embrionlar ulushi, klinik homiladorlik va tirik tug‘ilish ko‘rsatkichlari baholandi.

Statistik tahlil Statistica 8.0 dasturi yordamida amalga oshirildi. Miqdoriy ko‘rsatkichlar o‘rtacha qiymat va standart og‘ish ($M \pm SD$) ko‘rinishida taqdim etildi. Guruhlar o‘rtasidagi farqlar Student t-testi yoki Mann–Whitney U-testi yordamida baholandi. Sifat ko‘rsatkichlari χ^2 testi yordamida solishtirildi. $p < 0,05$ qiymati statistik ahamiyatli deb qabul qilindi.

Tadqiqot Butunjahon Tibbiyot Assotsiatsiyasining Xelsinki deklaratsiyasi (2013) tamoyillari hamda O‘zbekiston Respublikasining tibbiyot va biotexnologiya tadqiqotlari sohasidagi amaldagi qonunchiligiga muvofiq amalga oshirildi. Tadqiqotning barcha ishtirokchilari ishning maqsadi, vazifalari va usullari haqida to‘liq xabardor qilindi hamda tadqiqotda ishtirok etish, shaxsiy ma‘lumotlarni depersonalizatsiya qilingan holda qayta ishlash va ilmiy maqsadlarda foydalanish uchun ixtiyoriy ravishda yozma informatsiyalangan rozilik berdilar.

Natijalar. Tahlil natijalariga ko‘ra, guruhlar yosh ko‘rsatkichlari bo‘yicha o‘zaro taqqoslanadigan bo‘lib, statistik jihatdan ishonchli farq aniqlanmadi ($p > 0,05$). Normal ovarial rezervli bemorlarning o‘rtacha yoshi $31,8 \pm 3,4$ yilni, pasaygan ovarial rezervli bemorlarning o‘rtacha yoshi esa $33,4 \pm 4,1$ yilni tashkil etdi. Har ikkala guruhdagi ayollar asosan reproduktiv yosh davriga mansub bo‘lib, bu YRT dasturlari uchun maqsadli kontingent hisoblanadi.

Anamnestik ma‘lumotlarni tahlil qilish pasaygan ovarial rezervli bemorlarda Anamnestik ma‘lumotlarni tahlil qilish pasaygan ovarial rezervli bemorlarda operativ aralashuvlar sezilarli darajada ko‘proq uchrashini ko‘rsatdi. Ikkinchi guruhdagi 23 nafar (76,7%) ayolda reproduktiv tizim a‘zolarida avval o‘tkazilgan operatsiyalar qayd etildi. Jumladan, tuxumdon kistalari sababli laparoskopik operatsiyalar 3 holatda (10,0%), tuxumdon apopleksiyasi bo‘yicha operatsiyalar 4 holatda (13,3%), bachadon nayidagi ektopik homiladorlik sababli operatsiyalar 5 holatda (16,7%),

endometriozi bilan bog'liq operativ aralashuvlar 7 holatda (23,3%) aniqlangan. Shu bilan birga, pasaygan ovarial rezervli guruhdagi 7 nafar (23,3%) bemorda tuxumdon zaxirasining kamayishi bilan bog'liq aniq sabab aniqlanmadi. Mazkur holatlarda ovarial rezervning pasayishi ehtimol yoshga bog'liq biologik jarayonlar, genetik omillar yoki hali to'liq o'rganilmagan etiologik mexanizmlar bilan izohlanishi mumkin.

Normal ovarial rezervli guruhda reproduktiv organlarga oid operativ aralashuvlar atigi 2 holatda (6,7%) qayd etilgan bo'lib, bu ko'rsatkich pasaygan ovarial rezervli guruhga nisbatan statistik jihatdan sezilarli darajada kam bo'ldi ($\chi^2=27,43$; $p<0,001$). Olingan natijalar tuxumdonlar va bachadon naylarida o'tkazilgan operativ aralashuvlar ovarial rezervning kamayishi bilan uzviy bog'liq ekanligini ko'rsatadi.

Somatik anamnezni baholash natijalari shuni ko'rsatdiki, og'ir dekompensatsiyalangan ekstragenital patologiyalar ikkala guruhda ham aniqlanmadi. Surunkali somatik kasalliklar orasida surunkali pielonefrit, buyrak-tosh kasalligi va gastrit eng ko'p uchradi. Normal ovarial rezervli guruhda surunkali pielonefrit 4 nafar (13,3%) bemorda, buyrak-tosh kasalligi 2 nafar (6,7%) bemorda va surunkali gastrit 5 nafar (16,7%) bemorda qayd etildi. Pasaygan ovarial rezervli guruhda mos ravishda 5 nafar (16,7%), 3 nafar (10,0%) va 6 nafar (20,0%) bemorda ushbu kasalliklar aniqlangan. Somatik patologiyalar uchrash chastotasi bo'yicha guruhlar o'rtasida statistik ahamiyatli farq kuzatilmadi ($p>0,05$).

Transvaginal ultratovush tekshiruv va gormonal tekshiruv natijalari ovarial rezerv ko'rsatkichlari bo'yicha guruhlar o'rtasida sezilarli farqlar mavjudligini ko'rsatdi. Normal ovarial rezervli bemorlarda antral follikulalar soni (AFS) o'rtacha $14,8\pm 3,2$ tani tashkil etgan bo'lsa, pasaygan ovarial rezervli guruhda ushbu ko'rsatkich $5,6\pm 1,8$ taga teng bo'lib, farq statistik jihatdan ishonchli bo'ldi ($p<0,001$).

Anti-Müller gormoni (AMG) darajasi normal ovarial rezervli guruhda o'rtacha $2,8\pm 0,9$ ng/ml ni tashkil etdi, pasaygan ovarial rezervli bemorlarda esa $0,74\pm 0,26$ ng/ml ga teng bo'lib, birinchi guruhga nisbatan 3,8 marta pastligi qayd etildi ($p<0,001$).

Follikulostimullovchi gormon (FSG) darajasi pasaygan ovarial rezervli ayollarda sezilarli darajada yuqori bo'ldi. Normal rezervli guruhda FSG ko'rsatkichi $6,4\pm 1,7$ ME/l ni tashkil etgan bo'lsa, ikkinchi guruhda $10,8\pm 2,9$ ME/l ga yetdi ($p<0,001$). Lyuteinlovchi gormon (LG) darajasi mos ravishda $5,9\pm 1,8$ va $7,1\pm 2,1$ ME/l ni tashkil etdi, biroq ushbu farq statistik ahamiyat chegarasida bo'ldi ($p=0,061$).

Estradiol darajasi normal ovarial rezervli guruhda $48,6\pm 14,2$ pg/ml, pasaygan rezervli bemorlarda esa $62,3\pm 18,7$ pg/ml ni tashkil etdi ($p=0,004$). Bazal estradiolning nisbatan yuqori bo'lishi tuxumdonlarning kompensator faolligi bilan bog'liq bo'lishi mumkin.

Prolaktin ko'rsatkichlari ikkala guruhda ham fiziologik chegaralarda bo'lib, normal rezervli guruhda $13,9\pm 4,2$ ng/ml, pasaygan ovarial rezervli bemorlarda esa $14,8\pm 4,9$ ng/ml ni tashkil etdi. Guruhlar o'rtasida statistik ahamiyatli farq aniqlanmadi ($p=0,447$).

1-jadval.

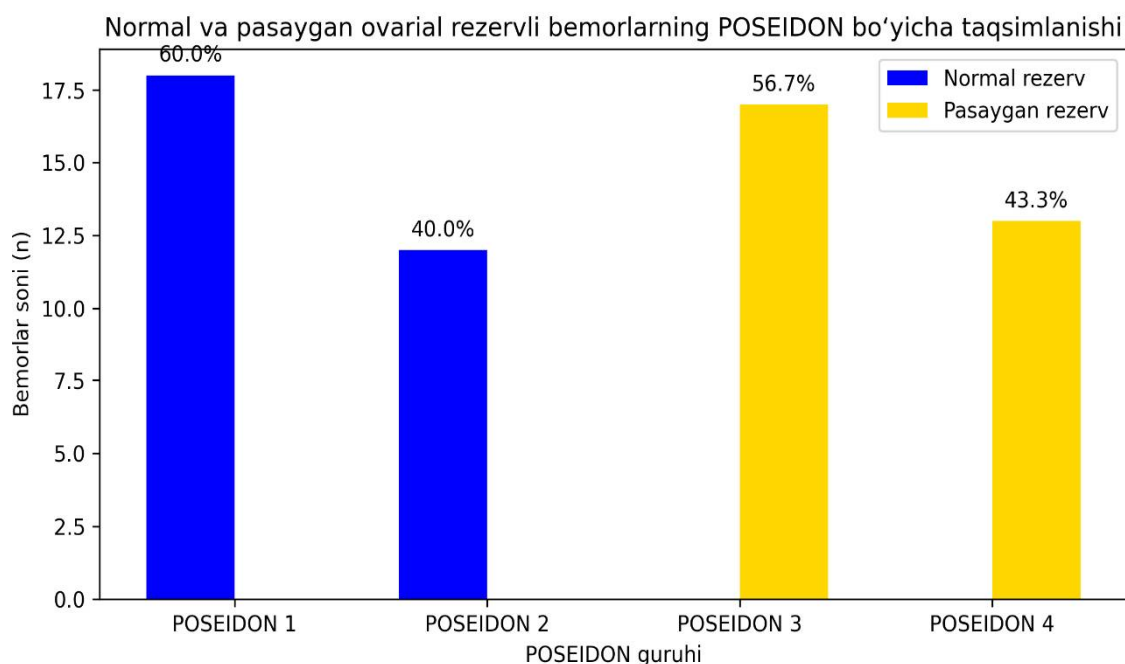
Ovarial rezerv va gormonal ko'rsatkichlarning qiyosiy tavsifi

Ko'rsatkich	Normal ovarial rezerv (n=30)	Pasaygan ovarial rezerv (n=30)	p
AFS, soni	$14,8\pm 3,2$	$5,6\pm 1,8$	$<0,001$
AMG, ng/ml	$2,8\pm 0,9$	$0,74\pm 0,26$	$<0,001$
FSG, ME/l	$6,4\pm 1,7$	$10,8\pm 2,9$	$<0,001$
LG, ME/l	$5,9\pm 1,8$	$7,1\pm 2,1$	0,061
Estradiol, pg/ml	$48,6\pm 14,2$	$62,3\pm 18,7$	0,004
Prolaktin, ng/ml	$13,9\pm 4,2$	$14,8\pm 4,9$	0,447

Olingan natijalar pasaygan ovarial rezervli bemorlarda tuxumdonlarning funksional zaxirasi sezilarli kamayganligini tasdiqladi. Ayniqsa, AMG va AFS ko'rsatkichlarining keskin pasayishi hamda FSG darajasining ortishi tuxumdonlar follikulyar apparatining kamayganligini ko'rsatuvchi asosiy laborator va ultratovush markerlar sifatida namoyon bo'ldi.

POSEIDON stratifikatsiyasi natijalari shuni ko'rsatdiki, normal ovarial rezervli bemorlar orasida yosh omili bilan bog'liq prognoz farqlari mavjud bo'lsa-da, tuxumdonlar zaxirasi saqlanib qolgan. Pasaygan ovarial rezervli guruhda esa POSEIDON 3 va POSEIDON 4 guruhlar ustunlik qilgan bo'lib (1-rasm), bu bemorlarda nazorat qilinadigan ovarial stimulyatsiyaga javobning kamayishi va individual yondashuv zarurligini ko'rsatadi.

POSEIDON stratifikatsiyasi natijalariga ko'ra, normal ovarial rezervli bemorlarning 60,0% (18/30) POSEIDON 1 guruhiga va 40,0% (12/30) POSEIDON 2 guruhiga mansub bo'ldi. Pasaygan ovarial rezervli bemorlar esa mos ravishda POSEIDON 3 va POSEIDON 4 guruhlariga taqsimlanib, ularning ulushi 56,7% (17/30) va 43,3% (13/30) ni tashkil etdi. Bu natijalar ovarial rezerv holati POSEIDON konsepsiyasi bo'yicha bemorlarni stratifikatsiya qilishda asosiy mezonlardan biri ekanligini tasdiqlaydi.



1-rasm. POSEIDON bo'yicha guruhlar ajralishi

Normal ovarial rezervli bemorlarda antagonist protokoli eng ko'p qo'llanildi – 20 holatda (66,7%), uzun agonist protokoli esa 10 holatda (33,3%) qo'llanildi. Ushbu guruhda gonadotropinlarning o'rtacha umumiy dozasi 1450 ± 320 ME ni tashkil etdi.

Pasaygan ovarial rezervli bemorlarda esa individualizatsiyalangan yondashuv asosida antagonist protokoli 18 holatda (60,0%), ikki martalik stimulyatsiya (DuoStim) 7 holatda (23,3%) va agonist flare-up protokoli 5 holatda (16,7%) qo'llanildi. Ushbu guruhda tuxumdonlarning kutilayotgan past javobi sababli gonadotropinlarning o'rtacha umumiy dozasi 2875 ± 640 ME ni tashkil etdi, bu normal ovarial rezervli guruhga nisbatan statistik jihatdan sezilarli darajada yuqori bo'ldi ($p < 0,001$).

Ovulyatsiya triggeri sifatida normal ovarial rezervli bemorlarning 18 nafarida (60,0%) rekombinant XG, 12 nafarida (40,0%) dual-trigger sxemasi qo'llanildi. Pasaygan ovarial rezervli guruhda esa dual-trigger usuli 21 holatda (70,0%), rekombinant XG esa 9 holatda (30,0%) qo'llanildi.

2-jadval.

Nazorat qilinadigan ovarial stimulyatsiya usullarining taqsimlanishi

Ko'rsatkich	Normal ovarial rezerv (n=30)	Pasaygan ovarial rezerv (n=30)	p
Antagonist protokoli	20 (66,7%)	18 (60,0%)	0,59
Uzun agonist protokoli	10 (33,3%)	0	<0,001
DuoStim	0	7 (23,3%)	<0,001
Flare-up protokoli	0	5 (16,7%)	0,02

Gonadotropinlarning umumiy dozasi, ME	1450±320	2875±640	<0,001
Dual trigger	12 (40,0%)	21 (70,0%)	0,019

Nazorat qilinadigan ovarial stimulyatsiyaning individual tanlangan protokollari har ikkala guruhda ham qoniqli embriologik natijalarga erishish imkonini berdi. Biroq ovarial rezerv holati oositlar soni va sifatiga sezilarli ta'sir ko'rsatdi. Normal ovarial rezervli bemorlarda olingan oositlar soni o'rtacha 12,8±3,4 tani tashkil etdi, pasaygan ovarial rezervli guruhda esa ushbu ko'rsatkich 8,4±2,1 taga teng bo'ldi ($p<0,001$).

Metafaza II (MII) bosqichidagi yetuk oositlar soni mos ravishda 9,7±2,8 va 6,8±1,6 tani tashkil etdi ($p<0,001$). MII oositlar ulushi normal ovarial rezervli bemorlarda 75,8% ni, pasaygan ovarial rezervli ayollarda esa 81,0% ni tashkil etdi ($p>0,05$).

Urug'lanish ko'rsatkichi normal ovarial rezervli guruhda 72,4±8,6%, pasaygan ovarial rezervli guruhda esa 67,8±9,4% ni tashkil etdi ($p=0,048$). Blastotsista bosqichigacha rivojlangan embrionlar ulushi mos ravishda 61,5% va 54,2% bo'ldi ($p=0,031$). Yuqori sifatli blastotsistalar ulushi normal ovarial rezervli bemorlarda 58,3%, pasaygan ovarial rezervli bemorlarda esa 46,9% ni tashkil etdi ($p=0,017$).

Individual ravishda tanlangan stimulyatsiya protokollari natijasida pasaygan ovarial rezervli bemorlarda olingan oositlar soni kam bo'lishiga qaramasdan, oositlarning yetilish darajasi va urug'lanish ko'rsatkichlari qoniqli darajada saqlab qolindi. Bu individualizatsiyalangan yondashuv tuxumdonlarning funksional zaxirasi kamaygan bemorlarda ham samarali embriologik natijalarga erishish imkonini berishini ko'rsatadi.

Xulosa. O'tkazilgan tadqiqot natijalari turli ovarial rezervga ega bepustlik tashxislangan ayollarda yordamchi reproduktiv texnologiyalar dasturlarining samaradorligi bemorning reproduktiv salohiyati va tuxumdonlar funksional zaxirasiga bevosita bog'liqligini ko'rsatdi. Pasaygan ovarial rezervli bemorlarda reproduktiv tizim a'zolarida avval o'tkazilgan operativ aralashuvlar sezilarli darajada ko'proq uchrashi qayd etildi, bu esa tuxumdonlar zaxirasining kamayishida jarrohlik omilining muhim rol o'ynashini tasdiqlaydi. Ovarial rezervni baholashda anti-Muller gormoni va antral follikulalar soni eng muhim prognostik mezonlar bo'lib, ular nazorat qilinadigan ovarial stimulyatsiyaga javobni oldindan baholash imkonini berdi. POSEIDON konsepsiyasidan foydalanish bemorlarni reproduktiv prognoziga qarab stratifikatsiya qilish va individual davolash taktikasini tanlash uchun samarali vosita ekanligi aniqlandi.

Individual tanlangan ovarial stimulyatsiya protokollari natijasida pasaygan ovarial rezervli bemorlarda olingan oositlar soni normal rezervli ayollarga nisbatan kam bo'lishiga qaramasdan, MII oositlar ulushi, urug'lanish darajasi va blastotsista hosil bo'lish ko'rsatkichlari qoniqli darajada saqlanib qoldi. Bu individualizatsiyalangan yondashuv tuxumdonlarning funksional zaxirasi kamaygan bemorlarda ham embriologik natijalarni optimallashtirish imkonini berishini ko'rsatadi.

Shunday qilib, turli ovarial rezervga ega bemorlarda YRT protokollarini individuallashtirish, ovarial rezerv ko'rsatkichlari va POSEIDON konsepsiyasi asosida stimulyatsiya strategiyasini tanlash reproduktiv natijalarni yaxshilashga, davolash samaradorligini oshirishga hamda mavjud reproduktiv potensialdan maksimal darajada foydalanishga xizmat qiladi. Zamonaviy reproduktologiyada individual yondashuvni qo'llash YRT dasturlarining muvaffaqiyatini oshirishning muhim shartlaridan biri hisoblanadi.

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