بررسی علل ناباروری زنانه

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با امتیاز باز آموزی

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- *Infertility is defined as 1 year of regular unprotected intercourse without conception . The term subfertility is used interchangeably to describe women or couples who may not be sterile but exhibit decreased reproductive efficiency.*

- *Approximately 85–90% of healthy young couples conceive within 1 year, most within 6 months. Infertility therefore affects approximately 10–15% of couples and represents an important part of clinical practice.*

- *Before any formal investigation begins, the major causes of infertility and the basic components of the infertility evaluation should be outlined for the couple.*

- *The major causes of infertility include ovulatory dysfunction (20–40%), tubal and peritoneal pathology (30–40%), and male factors (30–40%); uterine pathology is relatively uncommon, and the remainder is largely unexplained. Many couples suffer from multiple etiologies.*

- *The prevalence of each cause of infertility varies with age .Ovulatory dysfunction is more common in younger than in older couples, tubal and peritoneal factors have a similar prevalence, and male factors and unexplained infertility are observed somewhat more often in older couples.*

- When should a formal evaluation for infertility begin?

  Evaluation should be offered to all couples who have failed to conceive after a year or more of regular unprotected intercourse, but a year of infertility is not a prerequisite for evaluation.

- *Earlier evaluation is justified in the presence of obvious risk factors, such as irregular or infrequent menses, history of pelvic infection, surgery or endometriosis, or having a male partner with known or suspected poor semen quality, and also is warranted after 6 months of unsuccessful effort for women over the age of 35 years.*

- *It is always helpful to explain the reproductive process, to inform couples that normal cycle fecundability is approximately 20% (far lower than most realize), and to discuss the relationship between age and fertility, when it is relevant.*

- *some basic preliminary evaluation is reasonable to perform, if requested. A complete medical history helps in identifying or ruling out obvious risk factors, and tests to confirm ovulation and semen analysis are easy, inexpensive, and minimally invasive and quickly can identify some of the most common reproductive problems*

PRELIMINARY EVALUATION OF THE INFERTILE COUPLE

- *Irregular or infrequent menses indicate ovulatory dysfunction.*
- *Previous treatment for cervical intraepithelial neoplasia or observation of a mucopurulent cervicitis or cervical stenosis helps to identify unusual women in whom the cervix may present an obstacle.*
- *A history of previous hysteroscopy or reconstructive uterine surgery or recently developing symptoms of menorrhagia suggest an abnormality of the uterine cavity; previous uncomplicated first- and second-trimester pregnancy terminations generally do not adversely affect subsequent fertility.*

- *Worsening dysmenorrhea, new onset of dyspareunia, or physical findings of focal tenderness or cul-de-sac nodularity suggest endometriosis.*
- *A history of pelvic infection, septic abortion, ruptured appendix, ectopic pregnancy, abdominal myomectomy, or adnexal surgery should raise suspicion for tubal or peritoneal disease.*

- # CLASSIFICATION OF OVULATORY DISORDERS

WHO Group I: *Hypogonadotropic Hypogonadal Anovulation The group accounts for approximately 5–10% of anovulatory women and includes those with low or low-normal serum follicle-stimulating hormone (FSH) concentrations and low serum estradiol levels, due to absent or abnormal hypothalamic gonadotropin releasing hormone (GnRH) secretion or pituitary insensitivity to GnRH..*

- *Examples include women with hypothalamic amenorrhea relating to physical, nutritional, or emotional stress; weight loss; excessive exercise; anorexia nervosa and its variants; Kalmann syndrome; and isolated gonadotropin deficiency. Women in the group may require hypothalamic-pituitary imaging to exclude a mass lesion.*

- **WHO Group II**: Normo gonadotropic
  Normo estrogenic Anovulation
  This group is the largest, including 75–85% of anovulatory women, and is characterized
  by normal serum FSH and estradiol levels and normal or elevated LH concentrations.

- *The most common examples are women with polycystic ovary syndrome (PCOS), some of whom ovulate at least occasionally. Women with PCOS should be assessed for cardiovascular disease risk factors and glycemic status.*

WHO Group III: Hyper gonadotropic Anovulation

The group accounts for approximately 10-20% of an ovulatory women and includes those with elevated serum FSH and low AMH concentrations; most have amenorrhea. The classic example is premature ovarian insufficiency.

- **Hyperprolactinemic Anovulation**

Approximately 5–10% of anovulatory women have hyperprolactinemia, which inhibits gonadotropin secretion. Most hyperprolactinemic women have oligomenorrhea or amenorrhea. When hyperprolactinemia cannot be attributed confidently to coexisting hypothyroidism or to medications, hypothalamic-pituitary imaging is indicated to exclude a mass lesion.

- *Thyroid disease, hyperprolactinemia,adrenal disease, pituitary or ovarian tumors, eating disorders, extremes of weight loss or exercise, PCOS, and obesity all are commonly associated with ovulatory dysfunction. specific treatment is more likely to succeed.*

- *At a minimum, anovulatory women should be screened for thyroid disorders (serum TSH) andhyperprolactinemia because both require further evaluation and specific treatment.*

- *Anovulation offers an obvious potential explanation for infertility but often is not the only infertility factor. Before ovulation induction begins, a screening semen analysis is prudent .*

- *hysterosalpingography or transvaginal ultrasonography merits serious consideration, particularly in women with a history of previous pelvic infection or surgery, ectopic pregnancy, inflammatory bowel disease, pelvic pain or other symptoms of endometriosis, or an abnormal physical examination.*

- *Preliminary HSG and transvaginal ultrasonography are recommended when the medical history or physical examination raises suspicion for coexisting uterine or tubal infertility factors, for women over age 35, and when ovulation induction requires treatment with exogenous gonadotropins.*

- # CERVICAL FACTOR: ABNORMALITIES OF SPERM-MUCUS INTERACTION

Cervical mucus
accepts or captures sperm from the ejaculate and the vagina, excludes the seminal plasma and morphologically abnormal sperm and thereby prolonging sperm survival and the fertile interval between intercourse and ovulation.

- *estrogen stimulates cervical mucus production, and as levels rise during the follicular phase, mucus becomes more abundant and watery, less cellular, and more easily penetrated by sperm. Progesterone inhibits cervical mucus.*

- *For most of the past century, the postcoital test for diagnosis of cervical factor infertility was considered a basic element of the infertility evaluation. The test involved collection of cervical mucus shortly before the expected time of ovulation and several hours (typically 2–12 hours) after intercourse.*

- *the mucus specimen was evaluated for pH, cellularity, viscosity and salinity and for the number and motility of surviving sperm.*

- *The postcoital test for diagnosis of cervical factor is no longer recommended.*

  -contemporary treatments for unexplained infertility include IUI or IVF, both of which negate any contributing cervical factor.

- # UTERINE FACTOR: ANATOMIC AND FUNCTIONAL ABNORMALITIES

The anatomic uterine abnormalities that can adversely affect fertility include congenital malformations, leiomyomas, and intrauterine adhesions; endometrial polyps also have been implicated.

-The only functional uterine abnormality of specific interest in the evaluation of infertility is chronic endometritis

- *There are three basic methods for evaluation of the uterine cavity: HSG, TVUS or saline sono hysterography, and hysteroscopy. HSG is the traditional method and most often still the best initial test because it also evaluates tubal patency.*

- *However, in women with no risk factors for tubal disease and*
  those whose tubal status is already known (from earlier surgery for other indications) or is largely irrelevant (as in women who require IVF for severe male factor infertility), ultrasonography offers a simpler and better tolerated alternative that also may reveal unsuspected ovarian pathology (cyst, endometrioma), with no radiation exposure.

- *. When symptoms suggest an anatomic lesion of the uterine cavity (menorrhagia, intermenstrual spotting), sono hysterography is the most sensitive and logical diagnostic test.*

- *Hysteroscopy is definitive but has few diagnostic advantages over sono hysterography and generally can be safely reserved for treatment of abnormalities already identified by less invasive and costly methods.*

- Hysterosalpingography

HSG accurately defines the size and shape of the uterine cavity, provides clear images of most uterine developmental anomalies (uni cornuate, septate, bicornuate, and didelphys).

- *The various developmental uterine anomalies generally have a fairly characteristic appearance on HSG. A uni cornuate uterus is typically somewhat tubular, deviates to the left or right, and has one fallopian tube.*

- *Both septate and bicornuate uteri typically exhibit a common lower segment that divides into two distinct horns to yield a Y-shaped configuration with varying distance between the upper arms. The two anomalies cannot be differentiated by HSG alone; additional evaluation is required to establish an accurate diagnosis (standard or three-dimensional ultrasonography, sonohysterography,MRI, or laparoscopy).*

- *Transvaginal Ultrasonography and Saline Sonohysterography*

  TVUS is another method for evaluation of uterine factors in infertile women. Saline sonohystero graphy, involving TVUS during or after introduction of sterile saline through a catheter designed for the purpose, crisply defines cavity contours and readily demonstrates even small, but potentially important, intrauterine lesions.

- *Three-dimensional (3D) ultrasonography has the advantage of obtaining a coronal view and providing accurate and reproducible information about external and internal contours of the uterus.*

-both two-dimensional and 3D TVUS are more sensitive than HSG and approach the accuracy of hysteroscopy.

- Hysteroscopy

Hysteroscopy is the gold standard method for both diagnosis and treatment of intrauterine pathology that may adversely affect fertility.

- # Congenital Uterine Anomalies

Developmental uterine anomalies have long been associated with pregnancy loss and obstetric complications, but affected women generally are not infertile.

septate uterus was the most common anomaly among infertile women (3%), followed by arcuate (2%), bicornuate (1.1%), unicornuate (0.5%), and didelphys (0.3%). However, arcuate uterus is considered as a variant of the normal without any reproductive or obstetric consequences.

- *Septate uterus is the anomaly most highly associated with reproductive failure and obstetrical complications, including first- and second-trimester miscarriage, preterm delivery, fetal malpresentation, intrauterine growth restriction, and infertility.*
  The mechanisms probably is poor septal blood supply.

- *hysteroscopic septum resection is a relatively straightforward and brief outpatient procedure associated with low morbidity, no risk of adnexal adhesions or obligation to cesarean delivery, and a prompt and uneventful recovery.*

- *we believe it is reasonable and appropriate to consider pre-emptive surgical correction of a septate uterus, especially in women over age 35, women with infertility of long duration, women with other indications for surgical treatment, and women who require IVF or other treatments associated with increased risk of multifetal gestation and pregnancy loss.*

- Uterine Myomas

Infertility relating to myomas has been attributed to all of the following mechanisms:

-Displacement of the cervix, decreasing exposure to sperm

-Enlargement or deformity of the uterine cavity, interfering with sperm transport

-Obstruction of the interstitial segment of the fallopian tubes

-Distorted adnexal anatomy

-Impaired uterine blood flow.

- *submucous myomas (distorting the uterine cavity) have important adverse effects on fertility and pregnancy outcomes and that myomectomy improves both .myomectomy significantly improved pregnancy rates among women with submucous myomas (43% vs. 27%).*

- *Results are less encouraging for older women and those with multiple or large submucous myomas. Although complications of hysteroscopic myomectomy are relatively few, the risk of postoperative intrauterine adhesions increases .*

- *Whereas excision of large, deep intramural myomas that abut or displace the uterine cavity might reasonably be expected to improve fertility, removal of smaller myomas having no direct anatomical relationship with the cavity probably will not.*

- # Intrauterine Adhesions (Asherman Syndrome)

Intrauterine adhesions develop as a result of trauma. Any insult severe enough to remove or destroy the endometrium can cause adhesions.
90% of cases, intrauterine adhesions relate to curettage for pregnancy complications .after abdominal or hysteroscopic myomectomy, septum resection, or genital tuberculosis.

- *Intrauterine adhesions can be asymptomatic or cause menstrual disorders(hypomenorrhea, amenorrhea, dysmenorrhea), pain, recurrent miscarriage, or infertility.*
  HSG and saline sonohystero graphy confirm the presence of intrauterine adhesions .hysteroscopy is the gold standard of asherman diagnose.

- *Sometimes, the pressure provided by continuous infusion of distension media can lyse mild adhesions, or pushing the tip of the hysteroscope may suffice.*

  -cold scissors are safer than electrosurgery.

- ## Endometrial Polyps

  Endometrial polyps are hyperplasic endometrial growths pedunculated shape extending into the uterine cavity. They are generally rare in young women and increase in incidence with age.

  Saline sonohysterography is the most useful method of endometrial polyps.

polypectomy may improve reproductive performance in infertile women. Treatment must be individualized depending on the size of a polyp, associated symptoms, and circumstances leading to its discovery.

- Chronic Endometritis

chronic endometritis is common in women with symptomatic lower genital tract infections. Mucopurulent cervicitis is highly associated with chlamydia and mycoplasma infection, and both organisms are associated with chronic endometritis, which likely plays a role in the pathogenesis of tubal factor infertility.

- TUBAL FACTOR: TUBAL OCCLUSION AND ADNEXAL ADHESIONS

tubal
pathology accounts for 25–35% of female infertility. A history of PID, septic abortion, ruptured appendix, tubal surgery, or ectopic pregnancy strongly suggests the possibility of tubal damage.
PID is the major cause of tubal factor infertility and ectopic pregnancies.

- *HSG and laparoscopy are the two classic methods for evaluation of tubal patency in infertile women. HSG images the uterine cavity and reveals the internal architecture of the tubal lumen. Laparoscopy provides detailed information about the pelvic anatomy that HSG cannot, including adhesions, endometriosis, and ovarian pathology.*

- *it also is often painful, involves some radiation exposure, and has risk of infectious complications .Rare cases of shock and pulmonary and cerebral embolus and a case of hyperthyroidism due to iodine absorption have been reported following the use of oil-soluble media.*

- *Sonohysterosalpingography using ultrasonography and sterile saline instead of fluoroscopy and contrast media, and is another, but less common, method for evaluating tubal factor. Hysterosalpingo-contrast sonography is similar to sono HSG, but either contrast media or a more recently developed gel is used for demonstrating fallopian tubes. Chlamydia antibody tests have been used primarily for screening infertile women to identify those at high risk for having tubal disease who merit evaluation with laparoscopy.*

- Hysterosalpingography

HSG is best scheduled during the 2–5-day interval immediately following the end of menses, to minimize the risk for infection, to avoid interference from intrauterine blood and clot, and to prevent any possibility that the procedure might be performed after conception.

- *Treatment with antibiotics (doxycycline 100 mg twice daily for 5 days, beginning 1–2 days before HSG) is prudent when tubal disease is highly suspected, and specifically indicated when HSG reveals distal tubal obstruction, because risk for acute salpingitis is increased and treatment can prevent clinical infection.*

- *only three basic films are required (a scout, one film to document the uterine contours and tubal patency, and a poste valuation film to detect any areas of contrast loculation). Additional oblique films may be needed when the uterus obscures the tubes or the uterine cavity appears abnormal.*

- *HSG may reveal bilateral tubal patency (60–75%) or unilateral (15–25%) or bilateral (15–25%) tubal occlusion. Both false-positive and false-negative results occur, the former being much more common than the latter. Injection of contrast may cause “cornual spasm” that can be misinterpreted as proximal tubal occlusion.*

- Laparoscopy

Laparoscopy is regarded generally as the definitive test for the evaluation of tubal factors.

THANK YOU FOR ATTENTION