Proper steps for infertility detection can lead to proper remedies

By Kaylen M. Silverberg, MD

Infertility affects about 15 percent of the reproductive-age population in the United States. As our ability to diagnose and successfully treat infertility has improved rapidly, more and more infertile couples are presented to physicians' offices seeking assistance.

The basic steps of the infertility evaluation are:

- 1. Evaluation of ovulation.
- 2. Evaluation of the male factor
- 3. Evaluation of the uterus and fallopian tubes.
- 4. And, in certain cases, evaluation of the peritoneal cavity (Laparoscopy).

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Evaluation of ovulation

Ovulatory dysfunction is common, accounting for 30-35 percent of all cases of infertility. Several methods are available for evaluating ovulatory function.

Basal body temperature (BBT) charting is the least expensive but most inconsistent method. It requires the woman to take her oral temperature every morning upon awakening and is based on the observation that progesterone production following ovulation causes the basal temperature to rise by about one degree. A biphasic temperature curve provides presumptive evidence of ovulation. Although inexpensive, BBT charting provides only retrospective information and therefore cannot be effectively used to schedule insemination or time intercourse. It has also been demonstrated to correlate poorly with more accurate tests of ovulation, such as an ultrasound.

A second, indirect method of ovulation evaluation involves detection of the surge of luteinizing hormone (LH), which actually causes ovulation. Although LH is secreted by the pituitary gland throughout the first half of the menstrual cycle, its secretion increases markedly 36 to 40 hours before ovulation. This marked increase in LH secretion can be detected in the urine using a variety of commercially available kits. Ovulation usually occurs within 24 to 36 hours after urinary detection of the surge; therefore, these kits can be used to time intercourse or insemination.

Detection of an increase in serum progesterone during the second half of the menstrual cycle offers a third, indirect method of ovulation evaluation. During the first half of the menstrual cycle, progesterone production is minimal. The LH surge causes progesterone levels to gradually rise, peaking about seven days after ovulation. Therefore, a blood sample obtained around that time can also document ovulation. Although the exact progesterone level considered to be diagnostic of ovulation remains controversial, most reports suggest that a level of 5 ng/mL or greater in a natural cycle provides strong evidence that ovulation has occurred.

The fourth, and most informative, method of ovulation evaluation is the use of serial ultrasound monitoring. Transvaginal ultrasound allows one to monitor the developing follicle and confirm follicular collapse (and presumably oocyte release). When used in conjunction with LH surge detection, it provides both confirmation of ovulation, as well as a prospective method for timing intercourse or insemination.

Evaluation of male

About 30-40 percent of infertility is due to impaired sperm production or function. The test most commonly performed to evaluate male fertility is the semen analysis.

The parameters that constitute a normal semen analysis, published by the World Health Organization in 1999, include a sperm concentration of at least 20 million sperm/cc of semen. Also, at least 50 percent of the sperm should be actively swimming and at least 30 percent should have a normal shape.

As sperm production can fluctuate significantly from day to day, one abnormal semen analysis requires a second examination before the diagnosis of an abnormality can be made with certainty.

Evaluation of uterus, fallopian tubes

Fallopian tubes can become damaged as a result of previous pelvic infection, endometriosis or previous abdominal or pelvic surgery.

The primary test of tubal patency is the hysterosalpingogram (HSG). This test represents a cornerstone of the infertility evaluation and involves the injection of dye through the cervix, into the uterus and then into the fallopian tubes. The procedure is monitored with X-ray and usually causes mild cramping.

The HSG is an effective method of diagnosing blockage anywhere along the fallopian tube as well as uterine structural abnormalities, such as endometrial polyps or fibroids.

Evaluation of peritoneal cavity

The final step in the basic infertility evaluation is laparoscopy — a procedure that involves the passage of a small telescope into the abdomen to rule out anatomic abnormalities, such as endometriosis or scar tissue that could adversely affect fertility.

Endometriosis, which is defined as the presence of uterine lining cells outside of the uterus, has been reported to occur in 25-65 percent of women presenting for an infertility evaluation. Symptoms of endometriosis may include significant cramping with menstrual periods, pelvic pain, and/or pain with intercourse. Unfortunately, however, these symptoms do not correlate well with severity of the disease, and frequently women with significant endometriosis do not have symptoms at all.

Endometriosis can adversely affect fertility in several different ways and is usually easy to treat.

In addition to endometriosis, pelvic adhesions or scar tissue may also significantly reduce fertility. Resulting from a previous infection or surgical procedure, adhesions can distort the anatomic relationship between the ovary and the fallopian tube, impairing or preventing oocyte pickup. Laparoscopy affords an opportunity to both evaluate and treat any abnormalities that are encountered during a simple outpatient procedure.

The basic infertility evaluation is easy to perform and usually identifies the specific cause(s) of infertility. Successful, cost-effective treatments can then be employed to allow us to accomplish our goal of turning couples into families.

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