

Advanced Maternal Age and Egg Quality

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Biological vs Chronologic Age

Many humans live over 100 years. Most forms of medicine throughout history have sought to improve longevity. In the ancient Chinese medical text, the Nei Jing, there is a dialogue between the Yellow Emperor and an old Taoist teacher named Chi-Po. The Yellow Emperor asks, "Why does medicine exist?" Chi-Po's answer is, "...because people have severed themselves from their roots (the Tao)". Reconnecting a woman with her spiritual roots is an important aspect in maintaining her health and her youth. Understanding which energies decline with maturation can help restore youthful energetics and, in essence, turn back the reproductive clock. One's longevity is deeply connected with one's inner harmony. The result is manifested internally and externally. Nature is kind and forgiving. Enhancing our natural reproductive capacity will maximize the possibility of a child; however, we cannot wait too long and override nature. According to an old Chinese proverb, "The Yangtze never runs backwards... man recaptures not his youth."

The average reproductive life span for a woman is about 30 years. Years ago, women didn't menstruate on the average until age 15 or 16. Today girls of 10 or 11 are already menstruating. Part of this is due to the overabundance of synthetic hormones in our diet. We are coming of age faster and going into menopause later. We should be able to prolong our reproductive health as well as longevity.

Specifically applied techniques of Oriental Medicine can restore a more youthful endocrine system. Correct dietary practices and exercise routines are the first factors to contemplate in raising your fertility quotient and maintaining reproductive vigor. R.G. Godsen & C.E. Finch, in Definition & Character of Reproductive Aging & Senescence, state, "Dietary and endocrine manipulations can also slow the pace of ovarian aging." One study in Biol Reprod, 1985, Nelsen, Godsen & Felicio, found that feeding a low calorie diet to rodents slowed the disappearance of ovarian follicles. Whole foods, mainly consisting of organic fruits and vegetables, will help restore vitality, as well as avoiding alcohol, caffeine, and nicotine. Moderate tobacco use has been estimated to advance the onset of menopause by up to three years, and increase the rate of follicular atresia by 7% (Godsen, et al.) Any form of stimulant (including herbal) will age us prematurely. Moderate exercise at least three times per week helps improve the circulation to the internal organs as well as improving skin and musculoskeletal tone.

There is a belief in the reproductive medical community that age is the only factor that determines ovarian health. Medical studies conclude that ovarian decline occurs around age 40. These studies, however, do not take into account the relevance of environmental stressors and dietary factors. Environmental factors play an incredibly crucial role as far as reproductive aging is concerned. In 20% of monozygotic twins, the age at menopause differs by five or more years. Genetic parameters of oocyte aging have used mathematical models to calculate and determine that an 80% variation in ovarian aging is genetically determined, leaving a 20% distinction for environmental factors which are within our control. Guess what?! Our ovaries do not have a predetermined, finite half-life. They are organs that respond to favorable surroundings just as the rest of our bodily systems do. They are not locked away in unchangeable safes. This is very good news, however, because just as they respond negatively to poor diet, drugs, toxins, and stress hormones, they also respond positively to a healthy diet and pure lifestyle.

Our ovaries and the eggs residing in them have been present since before we were born. During embryologic development, the seven million germ cells which will become all of the 300,000 - 400,000 eggs we will possess at birth will be carried through menopause, when the follicular supply falls to less than 100. Certainly as we age, the DNA contained within the eggs becomes less stable. However, a human egg which has been lying dormant for 32 years is not itself tremendously more stable than one which has been resting for 40 years. When most women approach the peri-menopausal hormonal fluctuations, they still have thousands of eggs remaining within their ovaries! What makes them less responsive? Hormonal fluctuations. Once scientific study found that when the ovaries of older, anovulatory rats were transplanted into hormonally youthful rats' bodies, they became capable of ovulating. Neuroendocrine changes take place while the ovary is still well endowed with follicles. These variations begin with central, hypothalamic control of the release of FSH. Acupuncture and herbal therapy can forestall age related decline.

What happens as we approach middle age is that our own hormonal makeup wavers. The hypothalamic - pituitary - ovarian axis, an invisible network of hormonal relationships which govern our reproductive status, becomes less stable with age. The ovaries become less predictable because of the hormonal fluctuations and the eggs contained within quit responding predictably to the hormones. Once they become less responsive to the FSH, more of them cycle through and go to their "resting place." We need to provide more hormonal fuel for the remaining thousands of eggs, i.e., strengthen the hypothalamic-pituitary-ovarian axis, when age becomes an issue. Acupuncture techniques have been proven to regulate the hypothalamic - pituitary - ovarian axis. The result will then be manifest in the ovaries and their hormone production.

Contrary to popular reproductive belief, follicular growth from the resting state until ovulation takes up to 100 days, or more than three menstrual cycles. Follicles are selected from the primordial pool of resting follicles

almost a year before ovulation, and are recruited to become active. During the initial pre-gonadotropin period the follicle responds to regulatory factors within the ovary itself, which are like hormones. These growth factors are like hormonal precursors. One important ovarian growth factor, insulin-like growth factor, is the precursor to the youth hormone which is secreted by the thymus gland called growth hormone. Others have names like insulin-like growth factor binding protein, interleukin, tumor necrosis factor, inhibin, vascular endothelial growth factor, and activin. These ovarian growth factors help determine the eventual fertility potential of the oocyte (egg).

During this period which lasts for many months, the healthy, responsive follicle determines its own fate with these regulatory proteins. The (0.03mm) follicle is first chosen from the primordial pool to double in size (to about 0.06 mm) and become a primary follicle, about 150 days prior to ovulation. It reaches its secondary phase approximately 120 days before ovulation, when it again doubles in size. The follicle then cycles through the pre-antral and early antral phase and grows from about 0.12 mm to about 1.0 mm in approximately 65 days. It has quadrupled in size during this time, and has gone through many stages of proliferation.

It is only during the last two to three weeks of its cycle through the ovary that the follicle becomes dominant and responsive to FSH. During the selection phase, which lasts approximately ten days, it more than doubles in size as it differentiates further. The follicle itself acts as its own gland by autocrine and paracrine mechanisms to make itself responsive to FSH. Now the follicle grows to twice its previous size again, surfaces and becomes the estrogen-producing follicle which then makes itself receptive to luteinizing hormone by expressing a receptor at the preovulatory phase. It fulfills its major purpose as it releases its egg, whose chromosomes are beginning to rearrange, for a chance to become fertilized. The follicle then finalizes its life cycle by becoming its own endocrine gland called the corpus luteum, which secretes progesterone to maintain a pregnancy. Imagine the potential energy required for these great follicular achievements! This is not an undertaking for the frail!

A woman who is over age 43 or 44 will often be turned away from any chance at assisted reproductive technology because of the age and therefore poor state of her ovaries. She may fail to respond as favorably to the gonadotropins as her younger counterpart, because her eggs have become less responsive to hormonal stimulation. She may produce few numbers of eggs, whose outer capsule is tougher and thus less capable of fertilization. Those eggs which do become fertilized may have more inclusions during early embryologic development, meaning there are more waste products put out by the mitochondria. Less make it to the blastocyst stage, even fewer are capable of implantation, and fewer yet make it through the full embryonic development. That is why a woman over forty is statistically less likely to give birth, and is encouraged to find alternative ways of becoming a mother. She will be told she has poor quality eggs. Her reproductive endocrinologist will strongly suggest that she consider using a younger donor's eggs. This makes her chances of having a baby, and thus her RE's statistics, much higher.

The reason for the lower chances of assisted reproductive success in older women is because the only portion of the hormonal process that is manipulated is the last few weeks of this many months' process. Massive doses of gonadotropin hormones are given to the women in order to (hopefully) recruit more follicles. This doesn't, however, make them of better quality. Perhaps the reason she has been unsuccessful in conceiving in the first place is because her hypothalamic-pituitary-ovarian axis has been ailing, and the reflection has been in the resistance of her ovaries, the eggs contained within, and thus the inability to conceive.

It seems that the older a woman is, this process of follicular development, which takes up the better part of a year, becomes more susceptible to breakdown. Experience has shown that if the hormonal system is in perfect working order and a woman has clockwork menstrual cycles, no matter what her age, a healthy egg can be released on time. It then has a good chance of becoming fertilized, implanting, and making it through embryologic development to become a child. The emphasis here is on the healthy hormonal cycle. If each individual element of the hypothalamic-pituitary-ovarian axis is still in healthy interrelationship during this process, the developing follicles are going to reflect this state of well-being.

How do we give the HPO axis the attention it needs to express its full reproductive vigor? Fortunately, the steps involved in turning back the reproductive clock are all natural. Unfortunately, rejuvenating the reproductive system takes time. Through some effort, we will give the entire reproductive-psycho-neuro-endocrinologic system the attention that a young woman's has effortlessly. We will help urge the body's attention to the mid-brain, the pituitary, the ovaries, the uterus, the spirit, and the mental and emotional health required to produce healthy eggs.

Author Resource:- Continue reading the [Eastern View and a success story at The Fertile Soul](#). Dr. Lewis authored *The Infertility Cure - the Ancient Chinese Wellness Program for Getting Pregnant and Having Healthy Babies*, as well as her new book, *The Way of the Fertile Soul - Ten Ancient Secrets to Tap Into a Woman's Creative Potential*. She has appeared on multiple radio and television shows throughout the country, all featuring her successes in helping women conceive with Traditional Chinese Medicine.