

Advanced Maternal Age and Egg Quality

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Longevity in more advanced species have evolved because of a higher intrinsic capacity for repair and stress resistance at the cellular level. We can extrapolate this into improved ovarian longevity as well. We know this can be affected by improving our environment, exercising, reducing stressors, eating a more organic, whole food diet, and supplementing with appropriate nutritional and herbal administration. These factors are within our control!

Biologic Age vs. Chronologic Age

Many humans live over 100 years. Most forms of medicine throughout history have sought to improve longevity. 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 Yangze never runs backwards... man recaptures not his youth.” 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. *Perhaps even more beneficial than just the kind of exercise we are used to here in the West, are the stress reducing exercises that attend to the subtle energy body with which we live and operate: tai chi, yoga, martial arts and especially daily meditation. All of these need to have instruction from a properly trained teacher.*

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 untouchable 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. Neuro-endocrine 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 that 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, is an insulin-like growth factor, and it is the precursor to the youth hormone that 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 pre-ovulatory 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.

The Eastern View

Three energy meridians make up the hypothalamic-pituitary-ovarian axis: the Penetrating, the Conception, and the Governing meridians. These energies become fulfilled when a girl reaches menarche, and become depleted when a woman enters menopause. Statistically, the earlier a young woman first menstruates, the later will be her entrance into menopause. Her reproductive age span is a function of her underlying congenital source qi.

The Penetrating meridian represents the HPO axis. It originates in the uterus and presides over the function of menstruation and governs the hormonal cycles. It is the deepest level of life, which equates with the most innate functions of our more primitive brain, as it relates to the psycho-neuro-endocrinological system. From it arise the energies of the conception and governing meridians, the yin and the yang of the endocrine system.

The inherent functions of these meridians are the basic forces of our internal nature which determine cellular health, cellular division, continued development, maturity and decline. We might say that the Penetrating meridian is responsible for the follicular manifestation of growth factors and hormonal expression.

We all have been programmed with a certain reproductive energetic potential which governs hormonal fluctuations and eventual decline. This is not fixed. It is subject to certain environmental and internal factors which can stave off or facilitate the decline.

The usual process of reproductive transition from a fertile to a non-fertile state spans many years. It should be a smooth evolution from an energetic focus on self (pre-puberty), to an energetic focus on reproduction (menarche), to an eventual outward energetic shift (menopause). This transition is physiological, psychic, and spiritual.

The physical ramifications of these shifting energies begins when a girl enters menarche. At about age 14, the hormonal system is effulgent, and the Penetrating meridian fills to overflowing, after which the menses arrive like a tide. The uterus fills to overflowing from one full moon to the next. This process occurs every month unless a pregnancy (or other hormonal interruption) suspends the process, until the woman approaches middle age.

When her reproductive life span is complete, the energies are transferred from the uterus to the heart via the Penetrating and Conception meridians. She moves from a state of procreation (represented by the kidney system) to a state of wisdom, represented by the heart. This is seen as a literal shifting of energies. If this energetic transition from the uterus upward to the heart is not smooth, these rising energies will produce heat signs like hot flashes and night sweats. Irritability will result from the obstructed flow of qi. The kidney system will become depleted and will no longer be able to support bone growth.

When we treat menopause with Traditional Chinese Medicine, we make this transition smooth and complete. When we treat age related fertility factors, we interrupt and stall this transition. Again, we try to regulate the hormones and make them function as if they are young again. The extraordinary meridians that govern endocrine relationships cannot be separated from the kidney system.

The Kidney System

The signs and symptoms of declining kidney function parallel an actual decline in hormone levels.

In Chinese medicine the kidney system is responsible for our genetic constitution, and underlies all other metabolic processes. It dictates growth and development. It provides the essence for the uterus and menstruation. When the kidney essence is depleted, women go into menopause. The kidneys are responsible for bone and teeth formation and overall brain function. The kidneys control water balance and elimination.

The kidney system provides the substrate for and encompasses the relationship between the reproductive system, the skeletal system, the neurological system and the endocrine system.

When the kidney system begins to decline as a woman ages, symptoms include either signs of kidney yin vacuity, kidney yang vacuity, or both. Signs and symptoms of kidney yin vacuity are: low levels of estrogen, night sweats, hot flashes, vaginal dryness, low back weakness, soreness, or pain, or knee problems, ringing in the ears, dizziness, scanty fertile cervical mucus, excessive fear, dark circles around the eyes, scanty menstruation, a tongue lacking in coating that appears shiny or peeled.

Symptoms of kidney yang vacuity include have low back pain which is worse premenstrually, a sore or weak low back, cold feet at night, being cold in nature, low libido, frequent, dilute or nighttime urination, being fearful in nature, early morning loose, urgent stools, profuse vaginal discharge, dull menstrual blood, cold cramps during the period that respond to a heating pad, and a moist, pale tongue.

Spleen Vacuity

The spleen energies weaken with age right along with the kidneys, and often times precede it. The first tip off to declining spleen function is fatigue. We just seem to require more energy to get the same amount of work done than we did a few years ago. Enter caffeine, which artificially stimulates the brain, and allows us to function with a little more energy. However, caffeine itself provides no additional energy to the body... it merely borrows it from... (you guessed it), the kidneys! When the kidneys are already taxed, and still have to preside over menstruation and hormonal functioning, guess what gives? Reproduction: that life process which is not necessary for our survival.

Another sign of waning spleen energies is that things start to fall. Our skin begins to sag, our breasts fall, veins appear on the surface of our skin, we get hemorrhoids, and our uterus falls into our bladder. We have to pee more often. Our blood pressure fluctuates. Our digestion and elimination become more sensitive. Our metabolism changes. We react more to our environment and catch cold more often. Even our protective mechanisms start to falter.

Progesterone drops off during the luteal phase. Periods come earlier and are often accompanied by loose stools.

Treatment

Happily, we have methods to tonify both the energies of the spleen and the kidney.

- Exercise: try to include tai chi, yoga or chi gung – they support the energetic body as well as the physical
- Diet – focus on Whole Foods and begin to eliminate foods that come in packages or boxes. Fresh, organic veges, fresh fruit (not canned or frozen), grain fed, range free meats, fresh fish, not farmed. Most commercial meats, milk and cheese have growth hormones added, so be careful here.
- Rest – we are a country of sleep deprived children and adults. Make sure to allow a full 8 hours for sleep
- Meditation – extremely important and it's remarkable benefits are becoming newsworthy as more research shows impressive results. Spend a bit of time alone each day if nothing else.

Kidney Deficiency:

If you suffer from signs of kidney vacuity, the following foods are found helpful:

black beans and legumes, kelp, parsley, tofu, raspberries, walnuts, wild rice, spirulina, wheat germ, wheat grass, string beans, mulberry, millet and (non-hormonally treated) organ meats, oysters, clams, lobster, crayfish, pork, venison, chestnuts, black sesame seeds, lycium fruit, aduki beans, yams, gelatin, chestnuts and corn. Glandular supplements (including placenta) also fall under this category.

Yin Deficiency (hot flashes, night sweats, vaginal dryness, lack of fertile, cervical mucus):

A diagnosis which includes kidney yin deficiency should be rich in the following foods:

- Wheat and wheat germ, tofu, millet, barley, rice, amaranth
- Black beans, kidney beans, string beans, mung beans, and bean sprouts, seaweed, chlorella, spirulina
- Fruites – apples, bananas, raspberries, blackberries, grapes, mulberries and melons
- Eat shellfish – clams, muscles and also eggs, organ meats – a bit more difficult to find, so check with Standard Process practitioners for products with organ foods in them
- Avoid the use of dry, pungent, acrid spices

Yang Deficiency (pre-menstrual low back pain, low libido, nighttime urination, cold feet):

- Eat warm foods, never direct from the fridge
- Include ginger root when cooking and veges like black beans, aduki beans, lentils, parsnips, parsley, mustard greens, winter squash, cabbage, kale, onions, leek, chive, garlic
- Grains: oats, spelt, sweet brown rice and quinoa
- Fruits: cherries, dates, citrus peel

Spleen/Pancreas Deficiency:

- Do not eat raw, cold foods direct from fridge, ice cold beverages, ice cream, etc. Veges should be lightly sautéed and still crunchy to eat
- Avoid all refined carbs which includes just about everything found in a package or box – all foods made with flour, pasta, ejtc.
- Grains: barley is excellent
- Veges like yams, pumpkin and pumpkin seeds, green leafy veges – kale, mustard, collards
- Avoid all sugar and sugar substitutes (Stevia can be used moderately), including honey and maple syrup, corn syrup, fructose, maltose, and especially artificial sweeteners.

[NOTE: Do NOT take herbs if you are undergoing a hormonally stimulated cycle for any assisted reproductive technique without your primary physician's specific consent and approval. All herbs taken with ART must be prescribed by a licensed acupuncturist, never self-prescribe.]

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Some studies have shown that DHEA can be used instead of Growth Hormone to help ovarian response. A study published in Human Reproduction, 2000, reported that DHEA administration of 80 mg./day for two months improved response to ovarian stimulation after controlling for gonadotrophin dose. **Best to do salvia test with a practitioner who is familiar with this lab test to see if DHEA is called for. Other wise, please Do Not self prescribe it, you can cause other imbalances.**

OTHER REPRODUCTIVE ENHANCEMENTS:

Femoral Massage (Increases blood flow to the pelvic organs)

Compress the large femoral artery, whose pulse you can feel just beneath the crease between your thigh and lower abdomen. When the flow has ceased and you feel the pulsation end at your finger tips, hold for 30 seconds. Repeat on the opposite side. Perform the femoral massage three times on each side, twice daily if possible. [NOTE: Do not perform this exercise if you have high blood pressure, heart problems, any vasculature impairment, glaucoma, or have had a history of strokes or transient ischemic attacks.]

Qi Gong Meditation with visualization for age related issues

This exercise utilizes the basic life force - the breath, for relaxation, and enhances the body's focus on the reproductive organs. We literally breathe life into and through the reproductive organs.

Lay on your back, with your eyes closed. Relax and breathe deeply. Notice any areas of tension you feel in your body from your head to your neck, down your arms and hands, through your torso, down your abdomen, buttocks, thighs, calves and feet. Tense the tight areas in your body even more, one by one. Breathe in, inhaling deeply down into your lower abdomen. Push your stomach out as you breathe in. Focus your attention on the tension in your body, then tighten the muscles in the area even more, and relax them fully as your exhale. Exhale all the way, deflating your abdomen when you breathe out. Breathe the tension in your body out through the breath.

Focus your attention on the tension, the breath, and the relaxation. Nothing more. When the tension in that particular part of your body is gone, move on to the next part. When you feel relaxed throughout your body, and your mind is clear, begin the visualization. Continue the deep breathing exercise, breathing deep into your abdomen and relaxing with each exhalation.

Visualize light entering your body through the top of your head with each inhalation. This light is clean and pure and represents the energy of life and youth. Breathe this light energy from the top of your head and let it pass through the base of your brain, the hypothalamus, which governs our basic reproductive functions. See this healing light enter the pituitary gland which is located behind the center of your eyebrows. Still on inhalation bring the focus of the breath down the midline of your body, between the breasts, down the abdomen, and eventually focusing your breath down to the region two inches below your navel. This is called the Dan Tien, where our life source begins. Let the breath energy pool here.

At the end of inhalation, bring the focus of light and breath from the area below your navel down to the out to your ovaries, just inside your hip bones. Let the light flow from the ovaries down the fallopian tubes and into the uterus, cleansing them of all impurities, and restoring their youthful

vigor. When your uterus has bathed in the purity, turn your attention down to the perineal muscles and perform a kegel exercise, squeezing the perineal muscles to retain the light. When you release the kegel, begin exhalation.

During exhalation, Return the light with the exhalation up the midline and back through the pituitary gland behind the center of your eyebrows, and through the base of the brain, and back to the top of the head. Repeat from inhalation until the movements become smooth and continuous.