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Hormones and Heart Disease

by Rebecca Anne Allison, M.D., F.A.C.P., F.A.C.C.

In my cardiology practice, I have observed the same patterns of disease incidence as my colleagues: prior to menopause, females have a much lower incidence of coronary heart disease than males. We may infer that female sex hormones convey a protective effect against cardiovascular disease. This inference is confirmed by large studies such as the Nurses' Health Study (Stampfer, et al., 1991), designed to follow women with no known coronary disease prospectively. 48,470 postmenopausal nurses were enrolled in this study. The risk for significant coronary artery disease was found to be twice as great in those women who did not take hormone replacement therapy.

How do these findings relate to hormonal treatment of male-to-female transsexuals?

Three Cardiovascular Effects

I will discuss the effects of estrogen and progestins on three aspects of cardiovascular physiology. The effect most recognized as beneficial is the effect on *blood lipids* — primarily cholesterol and its components. Elevated levels of LDL-cholesterol (low density lipoprotein cholesterol) lead to incorporation of cholesterol into the endothelium (internal lining) of the blood vessels, which begins an atherosclerotic plaque. HDL-cholesterol (high density lipoprotein cholesterol) has an opposite effect, promoting clearance of the harmful LDL-cholesterol from the blood and aiding regression of plaque.

The effects of estrogen on *blood clotting* are more controversial. A study published more than twenty years ago, the Coronary Drug Project (1975), evaluated the effects of five different drug regimens which were considered to have beneficial effects on cholesterol levels. Two of those drug regimens involved estrogen, and the study showed an increased tendency to thromboembolic (blood clotting) disorders. I will discuss the reasons this study should not be extrapolated to today's treatment of male-to-female transsexuals. Some effects of estrogen may even promote thrombolysis (dissolving of blood clots).

Finally I will mention estrogen effects on *vasoreactivity:* the ability of the blood vessels to dilate and constrict appropriately in response to stimuli. The loss of normal vasoreactivity or vasomotor tone is associated with both an increased incidence of hypertension, and an increased tendency to endothelial dysfunction and atherosclerosis.

Do the Data Apply to Transsexuals?

Of course, most published data on the effects of female sex hormones on the cardiovascular system have been from studies performed on genetic females rather than male-to-female transsexuals. One could question whether these studies are applicable to the transsexual population. Evidence suggests that they are, certainly in respect to vasoreactivity, and probably in respect to cholesterol.

Lipids (Cholesterol, Triglycerides)

The PEPI (Postmenopausal Estrogen/Progestin Intervention) Trial (1995) comprised three treatment arms: estrogen alone; estrogen with medroxyprogesterone acetate (Provera); and estrogen with micronized progesterone. The LDL cholesterol was lowered in all treatment groups. The HDL cholesterol was higher in all groups, but the highest levels were obtained in women taking estrogen alone or with micronized progesterone.

Two studies in the June 1997 Journal of the American College of Cardiology reported on arterial reactivity in transsexual males taking estrogen. They studied male to female transsexuals on long term estrogen, compared with matched male controls and female controls. They found significantly enhanced vascular reactivity in the transsexual groups, comparable to genetic females. The significance of this is that vascular reactivity allows for arterial relaxation and prevents spasm.

Numerous other studies have confirmed the PEPI findings. In the August 28, 1997 *New England Journal of Medicine,* a study compared estrogen and progesterone with simvastatin, a standard drug treatment to lower cholesterol. It was found that estrogen increased HDL-cholesterol comparably to simvastatin, and reduced both LDL-cholesterol and Lp(a), another lipoprotein which increases cardiac risk (Darling, et al., 1997).

When we consider the unquestionable benefits of lowering LDL-cholesterol, proven in many large scale trials, it becomes clear that estrogen therapy may play a beneficial role in preventing the cardiovascular complications of hypercholesterolemia.

Most studies indicate that estrogen increases plasma triglyceride levels. The significance of an elevated triglyceride in the absence of an elevated cholesterol is probably minimal, and the addition of progesterone seems to prevent much of the increase.

Thromboembolic Disorders

It has been thought that the risk of venous thrombosis and/or pulmonary embolism is increased in persons taking estrogen. In 1975 the Coronary Drug Project evaluated five drug regimens reported to lower cholesterol. These drugs included conjugated estrogens in 2.5 mg and 5 mg dosages, as well as thyroxine, niacin, and clofibrate. The estrogen components of the study were terminated early because of increased incidence of thromboembolism and nonfatal myocardial infarction. It should be noted that the test subjects were elderly males with a known history of coronary disease. No controls were established with regard to other cardiovascular treatment, especially aspirin use and cigarette smoking. These results should not be extrapolated to the younger, healthy transsexual population.

The Lancet in 1996 reported a slight increased incidence of venous thromboembolism in women on postmenopausal hormone replacement, but the absolute numbers were very low: one in 5000 had venous thrombosis and one in 20,000 had pulmonary embolism (Daly et al., 1996).

The incidence of thrombotic complications is significantly increased in women taking the higher doses of estrogen found in oral contraceptives, especially if they also smoke cigarettes. This is a good reason to counsel transsexual patients against taking excessive doses of estrogen. Lower doses are much less dangerous.

In low doses, estrogen inhibits platelet aggregation and reduces PAI-1, plasminogen activator inhibitor (Julian & Wenger, 1997). This promotes thrombolysis and helps to dissolve smaller intravascular thrombi.

Certain persons may have an increased risk for spontaneous thromboembolic disorders. The Leiden Factor V mutation occurs in two percent of the population and increases risk of thrombosis thirty-fold in women on oral contraceptives. These may be the persons who experience complications on low-dose estrogen. Other abnormalities predisposing to blood clotting include deficiencies of Protein C or Protein S.

To summarize, "The effects of estrogen on hemostasis and thrombosis are highly dose dependent... in general, the balance is shifted away from thrombosis with low dose estrogen, and towards thrombosis with high dose estrogen" (Julian & Wenger, 1997).

Vasoreactivity

The layer of smooth muscle which surrounds the arteries constricts and relaxes in response to certain stimuli. The major stimulus is the biochemical pathway called the renin-angiotensin system. Angiotensin, an inactive precursor compound, is enzymatically converted to a strong vasoconstrictor called angiotensin II, which produces elevation of blood pressure and a tendency to endothelial dysfunction. Opposing this effect are the

vasodilating compounds thromboxane, bradykinin, and nitric oxide, which stabilize the blood vessel and increase its ability to dilate.

Estrogen has definite effects on vasoreactivity in women and in men. It produces increased plasma renin activity, but diversion of renin-angiotensin activity away from angiotensin II and towards other compounds which are not vasoconstrictors. Estrogen increases production and activity of nitric oxide, functioning as an antioxidant.

Two studies in the June 1997 *Journal of the American College of Cardiology* reported on arterial reactivity in transsexual males taking estrogen. They studied male-to-female transsexuals on long-term estrogen, compared with matched male controls (McCrohon, et al., 1997) and female controls (McCrohon, et al., 1997; New, et al., 1997). They found significantly enhanced vascular reactivity in the transsexual groups, comparable to genetic females. The significance of this is that vascular reactivity allows for arterial relaxation and prevents spasm.

Conclusion and Recommendations

In conclusion, a regimen of relatively low-dose estrogen, with or without micronized progesterone, can be expected to confer long-term reduced risk of cardiovascular disease in postmenopausal females and in male to female transsexuals.

General evaluation of cardiovascular risk factors should include a measurement of blood pressure and a lipid profile (total cholesterol, LDL- and HDL-cholesterol, triglycerides) before and after initiation of therapy. Persons who smoke cigarettes should be emphatically urged to stop smoking, and should be made aware of the consequences and greatly increased risk of cardiovascular disease if they continue to smoke.

The routine use of low dose (81 mg) aspirin in male-to-female transsexuals, especially over age 40, should be considered for persons who have no bleeding disorders or contraindication to taking aspirin. This low dose may help to counteract any possible increased incidence of thrombotic events. Transdermal or injectable estrogen may have a reduced risk for thrombotic problems, since they are less likely than oral estrogen to stimulate the liver to produce proteins involved in the clotting process.

Certain persons may be at increased risk of cardiovascular disease, and should have special evaluation prior to the initiation of estrogen therapy. Persons with a history of hypertension should be followed closely and treated appropriately, preferably with medication which inhibits angiotensin-converting enzyme. Persons with a past history or family history of blood clotting disorders should have laboratory evaluation for conditions such as Factor V Leiden mutation.

Persons with a family history of cardiovascular disease should have more extensive screening, with electrocardiograms and probably treadmill exercise testing. The finding of coronary heart disease should be managed in the usual manner. Such persons should not be automatically rejected for estrogen therapy. If appropriate attention is given to reducing other risks, an informed decision may be made between patient and physician to proceed. Several alternatives may be considered, including the use of a more powerful anticoagulant such as warfarin. Orchiectomy may allow for lower doses of estrogen to be administered more safely.

Physicians treating transsexual patients should be encouraged to report results of long term follow-up with regards to the incidence of cardiovascular disease, so future data can be directly applicable to transsexual medicine rather than inferred from general population studies.

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AEGIS Position Statement

Mandatory Real-Life Test Before Hormonal Therapy: Unethical

Since 1992, we have advised against clinicians requiring transsexual clients to cross-live 24 hours a day as a prerequisite for initiation of hormonal therapy. We consider this practice ill-advised and not in the best interest of the clients. Our reasons for believing so are described in the advisory which accompanies this statement. It differs in only minor ways from the 1992 advisory.

To the credit of the North American therapeutic community, this once common practice is now rare. Still, a few therapists and at least one North American gender program continue to impose this requirement on all their transsexual clients. They do so without empirical evidence to support their position and in opposition to the majority opinion of the treatment community, which considers this practice needlessly intrusive and based on outdated assumptions (Denny, 1997; Devor, 1997; Kirk, 1997).

After consultation with our advisory board, we are now prepared to state that we consider it not only poor practice but in all but the rarest cases *unethical* to require a transgendered or transsexual client to enter a period of 24-hour real-life test in order to receive hormones. We believe that such a requirement places a tremendous burden on the client, causing grave risk for unemployment; loss of habitat; public harassment or physical attack; estrangement from family, friends, and church; and hostile treatment from public service agencies, government officials, and strangers. Many of these risks are minimized if the client enters real-life test after a period of masculinization or feminization caused by hormones. Needlessly placing a client at risk by requiring a change in public identity is antithetical to human dignity and good clinical practice and is an abuse of the clinical/client relationship.

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This position statement was prepared after consultation with the AEGIS Interdisciplinary Advisory Board, which is comprised of 30+men and women who serve without compensation. Advisory Board members represent various professions, including psychiatry, psychology, sexology, endocrinology, plastic and reconstructive surgery, and electrology. Individuals with gender identity issues are well-represented on the board.

Release of HBIGDA Standards of Care Revision is Eminent

For several years, a committee of the Harry Benjamin International Gender Dysphoria Association, Inc. has been working on a revision of the Standards of Care. Unlike previous versions, which incorporated only minor changes, this revision breaks in a major way from the original SOC, which have been around in nearly original form for nearly 20 years.

Considering the many ways in which the field has advanced, major changes in the SOC are certainly due. The issue of gatekeeping by mental health professionals especially needs to be re-addressed, with an eye toward decreasing the formulaic nature of the SOC and acknowledging that most transsexuals are able to make competent, informed decisions about their lives and bodies.

Unfortunately, drafts of the SOC to date have called for increasing this gatekeeping power, especially with regard to hormones. Several members of the revision committee have told us that one committee member is insistent upon this.

We trust the committee will do the right thing and overrule this lone member, who represents an institution with an archaic, psychoanalytic view of transsexualism — a place which, by the way, is infamous for abusing and manipulating transsexuals — and give HBIGDA standards of care which will serve as well as previous versions.

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Psychiatric Labels: Still Hard to Shake
by Melanie Erin Spritz, D.O.

I am in a terribly lonely place. I am the first "out of the closet" transsexual resident in the world. I am in a difficult dual residency training program in Internal Medicine and Psychiatry in the competitive and stressful marketplace of New York City. I am currently in the autumn of my PGY2 year in my psychiatric residency. I am labeled as a psychopathology by those who are striving to teach me, yet who are both fascinated and repulsed by my existence.

My dilemma is that I am treated not with true collegiality, but as both a diagnosis and an object of derision, curiosity, pity or sympathy. The label has taken on a life of its own and often supersedes my own identity as a human being, a woman, and a psychiatrist.

My diagnosis is based upon the fact that I was born a male, and, uncomfortable with that body and lifestyle, altered my gender identity to that of a female. According to the DSM-IV, I am a male who suffers from Gender Identity Disorder of Adulthood, with specifics on my sexual attraction in my new gender role attached to the diagnosis. I am listed under the heading of Sexual and Gender Identity Disorders, grouped with sexual dysfunctions and paraphilias, so that I am included in the company of pedophiles, those who are impotent or frigid, and those who are voyeurs and exhibitionists. I am listed as male, even though to the naked eye I appear female.

I do not perceive myself to have any sort of psychiatric disorder, since I view psychiatric disorder as inhibiting one's ability to function within the world. I am quite capable of handling the stress of daily living. I have seen my performance as a physician actually improve from that of a male medical student to that of a female resident. I have gained an increased empathy and understanding for my patients, whether they be female or male, white or black, from this country or from another, whether they be lesbian, bisexual, gay, or straight. Just as gender differences stand as an artificial division of society in the name of sexism, there are other artificial divisions based on all sorts of cultural, religious, and ethnic pretexts. Anything can be used to justify a prejudice in our society, so long as you are "different" in some way. I have shed many of my prejudices, just as I shed my male body. However, I am the victim of prejudice just the same.

I look upon the GID diagnosis in the DSM-IV much as lesbian or gay physicians must have looked on the DSM-II when it included homosexuality as a disorder which required treatment. I see myself as a pioneer of sorts, fighting a battle very few people have the patience, courage, or strength to endure. Like a gay or lesbian psychiatrist, I am subject to the taunts of a homophobic public — except that as a resident, my public includes my colleagues and instructors in psychiatry. Like any other woman, I am subject to the sexism that is present in society. Unlike either of the above, I am subject to intense scrutiny and speculation about anything about me that is just not that "female" enough.

In my short time as a physician, I have experienced death threats and a sexual assault in my previous osteopathic rotating internship as a result of my transsexualism. My contract was not renewed and recommendation letters were not sent out. I was forced to come "out of the closet." I interviewed in four separate states for residencies in internal medicine, family practice, and internal medicine/psychiatry, for a total of 75-85 interviews in a four-month period. During the course of these interviews, I was told that I am repulsive. I was shown the door. In some cases, I was not given the customary tour of the hospital nor the usual lunch at the hospital's expense. I was politely asked "Where else did I apply?" and "Why had I chosen that particular institution?" With the excuse that it was "necessary for the health plan," I had to endure often impolite questions involving my past medical history, including any and all surgery. For the prurient interest of the interviewer(s), I was asked unnecessary and illegal questions regarding my personal life and/or habits. I had several "see the trannie" interviews, where I was looked on as an object of bemusement, puzzlement, scorn, and ridicule.

> Anything can be used to justify a prejudice in our society, just as long as you are "different" in some way.

Somehow I survived the process. On Match Day, I was anxious and praying that I would match with even one institution, without concern for specialty or geography. I knew my chances were marginal at best, simply because I had done something that had never been done before — I had interviewed as a transsexual physician out of the closet.

I matched at my current institution. It was my third choice. However, being the first transgendered person on staff carries particular burdens. I cannot lose control like my peers; there can be no tears at staff meetings. I cannot express the opinion that the person supervising me might have issues with my presence. Whatever problem my supervisors or peers might have with me, it is perceived to be my fault.

Transgendered people, like any other minority, are acutely aware of the body language and other cues that are given in reaction to their presence. Many of my transsexual physician peers have had acute psychiatric interventions and suicide attempts as a consequence of transphobia from the medical profession. I have experienced these same pressures.

As a psychiatric resident, I have been told that I am too defensive. My abilities have been questioned by the very people who have issues with me — yet never do my supervisors question their own biases or the reaction formations that occur in dealing with a person like me. During my time as a psychiatric resident, an attending physician has gone out of her way to address me as

"he." The chief resident on the unit chose to verbally assault and abuse me at every opportunity. On my child psychiatry rotation, I was required to conduct an in-service training session for all the personnel on the unit and to play a role in a group therapy session where I outed myself to all the children on the unit. I cannot tell you how some of my lesbian and gay psychotherapist friends got a laugh at the dynamic of that coming out story!

I have had my work invalidated by personal insult. I have had to justify my very existence in supervisory sessions, the purpose of which was to discuss the therapeutic processes of patients. I have repeatedly been required to demonstrate my knowledge base in psychiatry and to perform above the level of my nontranssexual peers.

I am not saying that I have not encountered significant support in my program. At times, I have both questioned and applauded the courage of my residency training directors for accepting me in the first place. My directors have also demonstrated a willingness to aid me in any problems unique to my situation, and have expressed their support in many concrete ways —not the least of which is an ability to listen and learn from my point of view. Many attending physicians I have encountered have aided me in the course of my duties and on a more personal level. I am supported by many of the attending physicians who work in the psychiatric emergency room, and by the nursing and ancillary personnel, including social workers and psychologists. I have a support network, not just of sexual minority residents within psychiatry, but of heterosexual residents who respect my abilities and like me for the person I am. I sense that they value my uniqueness of viewpoint and see that I can be of value within the psychiatric profession. It is those people whom I love, respect, and admire.

Sometimes I argue with my psychotherapy teacher, who trained as an analyst. Initially, I believed that she was my adversary, only to have her give me articles which supported my sense of self worth. She also educated the attending physicians on my process of being. This was done in support, with affection toward me.

I am aware of the impact I have, as on out resident, on lesbian, gay, and transgendered patients. It is a hard road I travel, but my rewards lie in the fact that many souls I have encountered are both astonished and surprised that GID, unlike homosexuality, is considered a disorder. My gay, lesbian, and transgendered patients approach my existence with a maturity and compassion for human existence that impresses me. They give me optimism and strength to survive my trials. I see that hope, kindness, and compassion can exist for me and others like me.

We are seeing many articles that deconstruct gender signifiers,. These include a gay psychologist deconstructing the feminine in gay male identity (Corbett, 1996), a more fluid construction of crossdressing (Bullough & Bullough, 1997), and several articles questioning gender ambiguity and its place in society and culture (Benjamin, 1996; Mitchell, 1996; Massey, 1996; Spitler, 1996; First, 1996; Cohen-Kettenis & Van Goozen. 1997). I also see the emergence of new journals like *Gender and Psychoanalysis, Archives of Sexual Behavior,* and *Journal of Gender Studies,* which create a new presence in the psychiatric community. I see gender and its constructs being questioned in mainstream gay and lesbian magazines and newspapers, and formerly-silenced transgender voices being given a place. I see the emergence of a transgender subculture. I see the intersexual community beginning to spread its own wings in affirmation of selfhood both distinct and separate from the transgender universe. I see that humanity is growing and is ready to accept the existence of a person like me as a given rather than as an oddity of human nature.

My experience of stigmatization is not unique, nor is my situation of being a "diagnosis." However, I would ask many people to question the variation of gender as a signifier of psychiatric distress. Recently, a study (Cole et all., 1997) has demonstrated for the transgender community what Evelyn Hooker did for the homosexual population. I would ask the psychiatric community to reconsider its stance on Gender Identity Disorder in the DSM, and to look upon it as an imposition of the morality of society on those who are simply different from others in experience of gender, and not as a deviation, a disorder. I see a purpose in my being within the human experience, and I write this article to make people more aware of the fact that people like myself are a variation of sexuality and are not a deviation, and that we experience pain similar to that of other oppressed minorities. I have seen too many of my peers die as a consequence of the stigmatization process inherent in psychiatric labeling. I have seen it in my own life. I strongly urge the APA to consider the damage and ego dystonia that develops as a consequence of such labeling. I am no different than any other psychiatric or medical resident. I am one of you. I deserve the same dignity!

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Postsurgical Changes in the Neovagina

Neovaginal Lining Becomes Indistinguishable from "Normal" Vaginal Tissue

by M. Italiano

Recent attempts at vaginoplasty for transsexuals have utilized a variety of techniques, including split-thickness and full-thickness skin grafts, penile inversion procedures, and sigmoid-colon methods. Although the advantages and disadvantages of each continue to be debated, many stated disadvantages are clearly exaggerated or are erroneous. For instance, Masters and Johnson's (1966) pioneering work on the artificially-constructed vagina clearly demonstrates that "the method of creating an artificial vaginal barrel is incidental, since the functional reaction patterns of artificial vaginas are identical regardless of how they are constituted" (p. 101). This statement includes behavior during arousal and orgasm as well as lubrication, a subject steeped in controversy.

Some surgeons opt for the use of sigmoid-colon methods in the belief that this provides an advantage of lubrication secreted by colon mucosa. Other surgeons employ mucosal flaps from the urethra to supplement penile inversion for the purpose of providing lubrication. They believe lubrication can't be achieved by the use of skin grafts or penile inversion. This is untrue.

There is much to be learned from nontranssexual women who have had surgery for "inadequate" vaginas. From months to sometimes years after skin grafting, the graft loses all of its skin properties and adapts to its environment, becoming a mucosa which takes on the "exact cytology, gross and microscopic, of a normal vagina" (Sherfey, 1973). Masters and Johnson state, "Suffice it to say that on the basis of pure cytologic evaluation, it is impossible to differentiate the epithelial cells taken from the artificial vaginas of Subject 'A' (when under the influence of adequate hormonal replacement) or Subject 'B' from those of a normal vaginal mucosal smear" (Masters & Johnson, 1961, p. 203).

Some surgeons disagree, stating the tissue is not mucosa, but only resembles mucosa. They are only partially correct, since the normal female vaginal tissue is not truly mucosa either. It is called mucosa only because it lines a body passageway. It contains no mucous-secreting glands (Fawcett, et al., 1995). That is why lubrication is a transudate phenomenon, the source being dilation of the capillaries that surround the barrel and the subsequent squeezing out of fluid through the vaginal walls, which in normal and artificially constituted vaginas have been show to be a functioning two-way membrane (Masters & Johnson, 1966). Although Masters & Johnson note that production of lubrication usually takes longer in the artificial vagina, they also showed that some artificial vaginas are capable of lubricating as well and as rapidly as any normally constituted vaginal barrel and that two of their patients had "lubricated, in fact, more effectively than many women with normally constituted vaginas" (Masters & Johnson, 1966).

Pierce et al. (1956) demonstrated the conversion of skin to vaginal epithelium which, after twenty years, included normal vaginal PH levels, complete loss of hair, complete loss of pigment, complete loss of sweat glans, and normal vaginal epithelial glycogen levels. They proposed, "the process is not one of metaplasia, for no new cell types are produced. Rather, there is alteration of existing cell layers and the loss of the skin organs" (p. 6).

Those post-operative male-to-female transsexuals who amuse themselves with the peculiar statement that they still have a penis, but that it's just turned inside-out should note that not only do they not have a penis, but they don't even have skin of the penis any more. The histology of the tissue has changed. It also responds to hormones in an identical way as does a normal vagina, with "cyclic cornification and mucification" (Sherfey, 1973).

The presence of ovaries is not a necessity. For instance, "The estrogenic and early luteal effects demonstrated by Subject 'A' are obvious, and serve as a clinical indication of adequate steroid replacement in this surgically castrated female" (Masters & Johnson, 1966, p. 203).

More impressive is a recent report by Alessandrescu et al. (1996), who did biopsies on twelve artificially constructed vaginas and found an epithelial structure identical to that of a normal vagina. Two examples are shown in the form of pictures using electron microscopy.

Although it may be suggested that transsexuals may respond differently than nontranssexual females with regard to the results of vaginoplasty, it is my opinion that the burden of proof that this is the case rests with the surgeons who employ such procedures as colon usage and mucosal flaps for the purposes they intend. Since the nature of their work is clinical and not generally investigative, they should at least advise their patients that future study may be necessary before the value of their technique can be substantiated.

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