Title:
Retrospective Chart Review for Assessment of Risks of Estrogen Therapy for Transgender Females

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Session Title:
Enhancing Educator, Clinician, and Parental Competence Regarding LGBTQIA+ Adolescent Health Through Clinical Research and Practice

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breast cancer, hormones and transgender

References:
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* Most recent articles available on this subject

Abstract Summary:
Purpose is to assess the prevalence of increased estrone (E1) level as a result of cross-sex estrogen therapy for male to female transgender patients, and compare the levels of conversion of estrogen to estrone from oral, injectable, transdermal, and pellet therapy; female estrone levels should < 33% of total estrogen

Content Outline:
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Introduction:
I. Current practice guidelines for providing cross-sex hormone therapy for transgender females
do not clearly address how to assess and monitor the risks of venous thromboembolism and
breast cancer associated with estrogen therapy previously shown in cisgender females.
A) The Endocrine Society published guidelines in 2009 suggesting that goal of therapy should be to match normal estrogen levels for cisgender females.
B) The World Professional Association for Transgender Health advises to monitor total estrogen level, Hga1c and recommends to follow the usual surveillance guidelines for cisgender females; i.e. mammograms and bone density scans.
II. A clear, concise measurement is needed to assess the efficacy and risk of estrogen therapy
because transgender females are exposed to estrogen at a younger age than menopausal
women.
A) Literature show that certain forms of estrogen are safer than others for cisgender females. This was done by showing a correlation between a higher amount of estrone vs.
estradiol in women with breast cancer and those with venous thromboembolism.
B) Measuring estrone level may be valuable in quantifying the risk of estrogen therapy for
transgender females.
III. A retrospective chart review shows that there is a trend in the resulting estrone level that is
dependent on the form of delivery.
A) There is a high level of estrone among transgender females on oral estrogen
B) There is an acceptable amount of estrone among transgender females on injectable estrogen.
C) There is an optimal amount of estrone among transgender females using transdermal
preparations or implantable pellets.
D) Estrone levels were reduced to a desirable level after changing the form of estrogen into
either injectable or pellet form after an initial measurement while on oral estrogen

therapy.
Conclusions:
A) A high level of estrone is less desirable and correlates to a higher risk of breast cancer or
venous thromboembolism for transgender females.
B) Risk of breast cancer or venous thromboembolism may be reduced by changing the form
of estrogen therapy that gives the lowest estrone level in transgender females.
C) Estrone level should be routinely checked and included in the assessment of the efficacy
and safely of estrogen therapy for use in cross-sex hormone therapy in transgender females.

Topic Selection:

Enhancing Educator, Clinician, and Parental Competence Regarding LGBTQIA+ Adolescent Health Through Clinical Research and Practice (25526)

Abstract Text:

Purpose:

Widely used standards of care for administration of cross-sex hormones are published by the World Professional Association of Transgender Health (WPATH) and The Endocrine Society. Current guidelines also discuss the possible risks of estrogen therapy including breast cancer and venous thromboembolism (VTE). Estrogen tablets (17beta estradiol) are the most accessible form of cross sex hormone therapy for transgender females because of its wide availability and relative affordability. Literature show that oral estrogen converts into estradiol (E2), the main form of estrogen in women of childbearing age and has strong feminizing effects; and Estrone (E1), a less potent form of estrogen - which also has been linked to an increased risk for breast cancer, increased endothelial inflammation, and VTE in cisgender females. Oral forms of estrogen expose patients to overdose levels of estrone (E1) due to the first pass liver effect. Current recommended dosing goal for estrogen in cross sex hormone therapy is to match estrogen levels of a cisgender female.
Current guidelines discuss routine preventive measurements of lipids, hemoglobin A1c or glucose in addition to estradiol (E2) and testosterone levels to monitor therapy. Despite the mounting data associating estrone (E1) levels with breast cancer and venous thromboembolism, guidelines do not specify the measurement of this lab value to monitor the safety of estrogen for cross-sex hormone therapy.
The purpose of this pilot study is to assess the prevalence of increased estrone (E1) level as a result of cross-sex estrogen therapy for male to female transgender patients, and compare the levels of conversion of estrogen to estrone from oral, injectable, transdermal, and pellet therapy. Per standard reference ranges for females, estrone levels should be no more than 33% of total estrogen.

Methods:

A retrospective chart review from a primary care clinic that provides cross-sex hormone therapy. Sample comprised of 52 patients ages 15 to 66yrs. Median age is 24 and mean age is 26.1. Chart review includes dates of service between November 1, 2017 and October 31, 2018.
Ethnicities are as follows: White/Non-Hispanic (n=39), White/Hispanic (n=6), Black/Non-Hispanic (n=2), Other/Hispanic (n=2), and Other/Non-Hispanic (n=3). No ethnicities from the following were in the sample: American Indian, Alaska Native, Asian, Pacific Islander
Patients identify as either transgender male-to-female patients (n=48), or gender-non conforming, assigned male-at-birth patients (n=4). Payer sources are as follows: private insurance (n=43), government insurance (n=4), no insurance (n=5).
The initial form of estrogen therapy included oral synthetic estrogen (n=41), bioidentical transdermal estrogen (n=1), and implantable bioidentical estrogen pellets as first line therapy (n=10).
Fractionated estrogen**,** a measurement that quantifies the amount of total serum estrogen and compares the estradiol to estrone ratio, was measured between 6 weeks to 1 year after initiation of therapy. A secondary measurement was also performed after the estrogen therapy was changed (for example, from oral estrogen to injectable estrogen). Eleven of the samples did not have secondary measurements due to lost to follow up, or measurement fell outside of the review dates.

Results:

For purposes of this study, the conversion of estrogen into estradiol (E2) and estrone (E1) were measured using the fractionated estrogen lab value. The following values are of estrone (E1) as follows: Among oral users, 76.3%; oral estrogen dissolved sublingually, 69.7%; injectable estrogen, 32.1%; transdermal patch, 23.2%; and implantable pellets, 22.8%. The most desirable form of estradiol from “best to worst” are as follows: Implantable pellets, transdermal preparations/patches, and injectable estrogen.

Conclusion:

On this sample size, oral estrogen dissolved sublingually or swallowed were not desirable in terms of estradiol conversion.
No person chose to have injectable estrogen as first line therapy. This may infer that injections are the least favorite form of first line therapy.
There is a high percentage of private insurance patients which may infer that access to care may be more available for those with insurance coverage.
There is a disproportionate number of white non-Hispanic subjects in this population, which also supports that access to care may be limited in the racial minority populations.
Higher estrone (E1) levels correlate to a higher risk of breast cancer, venous thromboembolism, and endothelial inflammation in postmenopausal women. The ratio of estradiol (E2) to estrone (E1) may be used to monitor the risks of estrogen therapy for transgender females. This marker may be valuable in assessing and reducing the risk of this population as they will be exposed to estrogen earlier than postmenopausal age.