Assessing Laboratory Values in Transgender Women Treated with Cross-Sex Hormone Therapy

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Introduction

- For *transgender individuals*, those people whose gender identity does not agree with their sex assigned at birth, transitioning is the process of changing their gender presentation to match their identity. Transitioning can involve social, legal, and medical changes [1].
- The medical transition may include gender affirming surgeries and *cross-sex hormone replacement therapy (HRT).*
- Laboratory medicine is used to guide clinical decision making, but the interpretation of lab values is challenging in the context of HRT due to a lack of standardized reference ranges accounting for the expected changes during and after the beginning of HRT [2].
- This study was designed to gather laboratory data from transgender women (male-to-female, MTF) after initiating HRT, and consider how these values compare to the laboratory values of transgender women and transgender men (female-to-male, FTM) before treatment with HRT (natal male and natal female values).

Methods

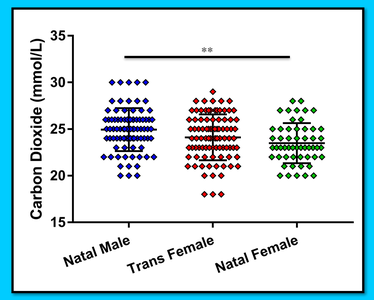
- We conducted a *retrospective chart review* of adult transgender patients at transgender-specific clinics at an urban county hospital (Parkland Hospital, Dallas, TX) and at a community clinic (Resource Center, Dallas, TX).
- We collected demographic information, medical history, and laboratory values including *complete blood counts, complete metabolic panels, liver function tests, lipids, and hormone levels*.
- We compared laboratory values from transgender women after 6-24 months of HRT to data from transgender women before initiating HRT, representing natal male values, and to data from transgender men before initiating HRT, representing natal female values.
- There was a wide range of medication type and dosage used for HRT; all types were included in this study. The majority were treated with *estrogens* (99%), primarily oral estradiol (87%), and *spironolactone* (96%); the use of progestins was also common (38%).

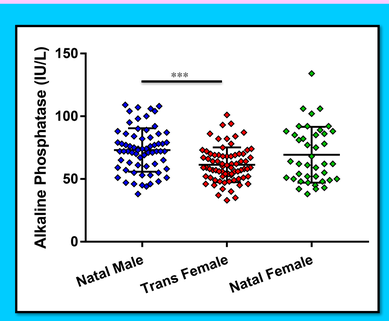
	Natal Male	MTF + HRT	Natal Female
n	90*	94*	62
Age (mean + SD)	31.0 ± 12.6	31.5 ± 11.9	27.1 ± 8.5
Race	White: 69.7%, Hispanic: 14.6%, Black: 14.6%, Asian: 4.5%	White: 68.1%, Hispanic: 16.0%, Black: 14.9%, Asian: 5.3%	White: 59.7%, Hispanic: 19.4%, Black: 16.1%, Asian: 6.5%
Gonadectomy (Total #)	1 (1.1%)	1 (1.1%)	1 (1.6%)

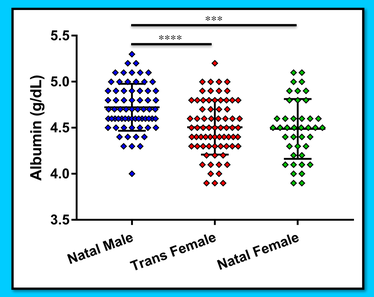
* There is an overlap of 64 patients in the MTF + HRT and Natal Male groups.

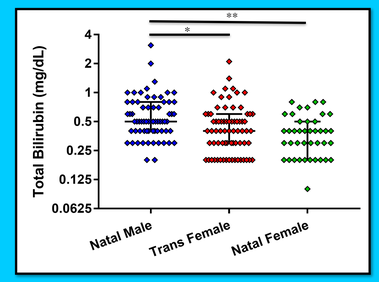
Results

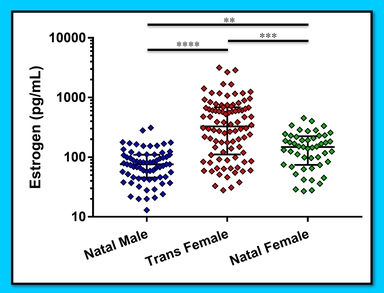
- We collected data from the charts of a total of 120 transgender women and 62 transgender men. 52% of transgender women had previously used some form of HRT at their first visit to the clinic.
- ***Estrogen*** showed *increases* in the MTF population treated with HRT, sometimes to supraphysiologic levels (>1000 pg/mL). **Platelets** increased to fall between the natal male and natal female values.
- Several parameters showed *decreases*; some to became similar to natal female values (**systolic blood pressure, sodium, calcium, albumin, alkaline phosphatase, total bilirubin, and red blood cells**) and others fell between natal male and natal female value ranges (**testosterone, carbon dioxide, creatinine, hemoglobin, and hematocrit**).
- A few parameters showed sex differences, but showed no change in transgender women using HRT compared to natal male values **(chloride, blood urea nitrogen, mean corpuscular volume, and red cell distribution width).**

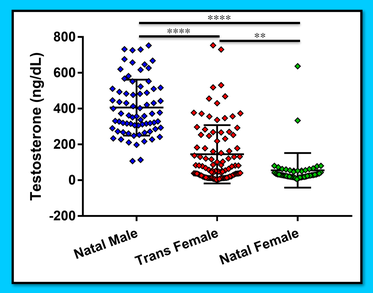


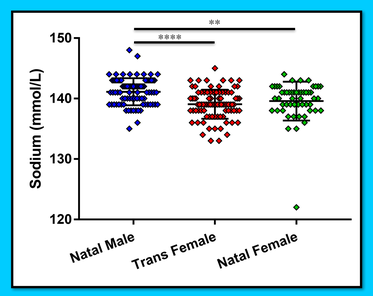


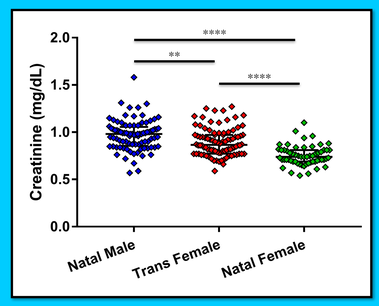


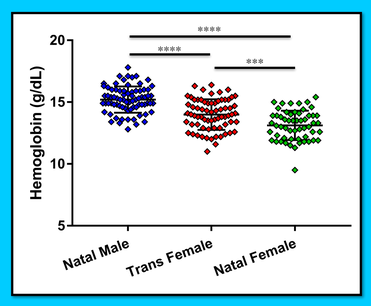


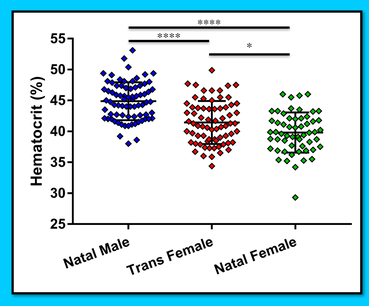












Conclusions & Future Directions

- In our study, we were able to support previous findings (left) and present several previously unreported differences in lab values (above) [3,4].
- After treatment with HRT, clinicians can expect high increases in estrogen, a decrease in testosterone, a decrease in sodium, and decreases in most hematologic parameters.
- Clinical guidelines recommend following hormone levels, electrolytes, and liver function tests every 3 months after the beginning of HRT, and to maintain estrogen within natal female physiologic levels (100-200 pg/mL) [5]. Our data show that these guidelines are generally not followed, and that some components if these guidelines may be not be useful e.g. following potassium and liver function tests.
- Active areas of research include the timeline of change in laboratory values after initiation of HRT, how medications and comorbidities influence the effect of HRT, and what changes in laboratory values take place when HRT is stopped. A prospective study with collection of more clinical data could tell us more about the clinical significance of the changes reported in lab values.

References

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