Drake University DUCURS
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HPG FUNCTION IN MEN AND WOMEN STRATIFIED BY DRUG USE AND HIV STATUS

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BACKGROUND

•The Hypothalamic- pituitary Gonadal (HPG) axis is affected by drugs of abuse in men, less is known in women

•HPG function is also influenced by HIV infection in men, less is known in women

•Our first goal is to investigate cocaine and/ or heroin administration in both men and women.

•Our second goal is to examine the impact of HIV infection on HPG function in both men and women

•Finally, our third goal is to examine a potential additive or synergistic effect of HIV and drug use on HPG function in men and women

METHODS

•Participants between 18 and 50 years of age were recruited and stratified according to sex, drug use and HIV status, see table 1a and 1b

•Measures of estradiol, free testosterone, LH and FSH were taken from serum samples at 8:00 am

RESULTS

TABLE 1a

Variable		n (%)
Sex		
	Male	108 (49)
	Female	113 (51)
Race		
	African American	205 (93)
	Caucasian	14 (6)
	Other	2 (1)
HIV Status		
	HIV$^+$	106 (48)
	HIV$^-$	115 (52)
Drug Use Status		
	Active User	157 (71)
	Non-User	64 (29)
Education		
	> 12th Grade	124 (56)
	< 12th Grade	97 (44)

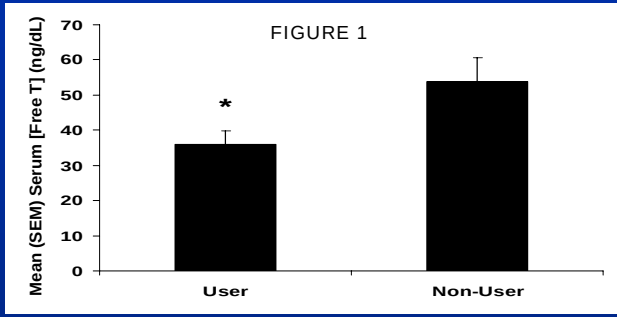
TABLE 1b

	Males n (%)	Females n (%)
HIV-negative, non-users	16 (7)	14 (6)
HIV-positive, non-users	21 (10)	13 (6)
HIV-negative, users	33 (15)	52 (24)
HIV-positive, users	38 (17)	34 (15)

•Mean free testosterone concentration was higher in men than women ($F(1,219) = 285.6$, $p < 0.001$)

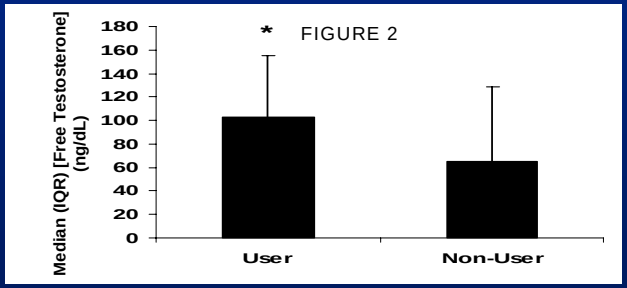
•Mean free testosterone concentration was lower in drug users compared to non-users ($F(1,219) = 5.86$, p , 0.05; see figure 1)

FIGURE 1



•When the interaction between sex and drug use was considered, median free testosterone concentration was significantly lower in males, but not females, who were drug users ($W(37, 71) = 1655$, $p < 0.05$; see figure 2)

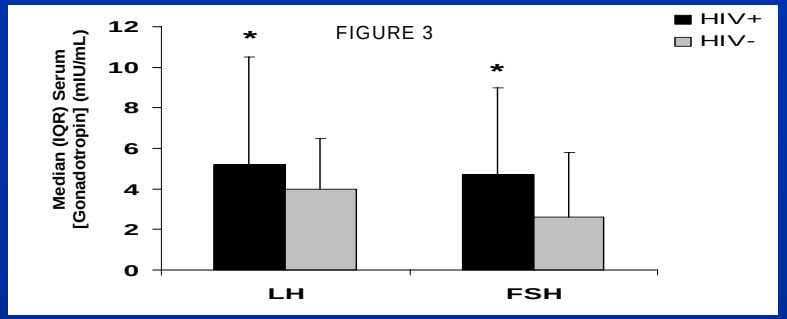
FIGURE 2



•When the interaction between sex and HIV status was considered, median free testosterone concentrations were significantly lower in HIV+ women (2.0 ng/dL) compared to HIV- women (2.8 ng/dL) ($W(66, 47) = 1923.5$; $p < 0.05$

•When the interaction between sex and HIV status was considered for gonadotropins, both median LH and FSH concentrations were significantly higher in HIV+ men than in HIV- men ($W(49, 59) = 1060.5$, $p < 0.05$; $W(49, 59) = 955$, $p < 0.05$; see figure 3)

FIGURE 3



•When an HIV status by drug use status interaction was analyzed for median gonadotropin concentration for each sex, men who used drugs and were HIV- exhibited significantly decreased FSH concentrations. (*Kruskal-Wallis X2* (3) = 10.45, $p < 0.05$; Table 2)

TABLE 2

		HIV Positive, User	HIV Positive, Non-User	HIV Negative, User	HIV Negative, Non-User	*p*-value
FSH						
	Men	4.5 mIU/mL (2.7, 7.7)	4.7 mIU/mL (2.9, 6.1)	2.4 mIU/mL (1.7, 4.5)	3.8 mIU/mL (2.3, 5.2)	*0.01
	Women	6.3 mIU/mL (3.1, 9.4)	5.8 mIU/mL (3.8, 14.0)	5.4 mIU/mL (4.2, 10.8)	8.5 mIU/mL (5.0, 26.9)	0.56

•Mean estradiol concentration was higher in women than in men ($F(1,219) = 15.92$, $p < 0.001$)

•When the interaction between sex and HIV status was considered, median serum estradiol concentrations were marginally lower in HIV+ women compared to HIV- women ($W(66,47) = 1850$; 0.07)

SUMMARY AND CONCLUSIONS

•Men and women respond differently regarding HPG function, to drug use and HIV infection.

•Men but not women who use heroin and cocaine exhibit lower free testosterone concentrations. Men with HIV experienced higher gonadotropin levels

•Men who use drugs and are HIV- experience increased FSH levels

•Women but not men who are infected with HIV exhibit marginally lower estradiol and free testosterone concentrations

•Clinical implications of these data will be discussed