Puberty-Blocking Hormonal Therapy for Adolescents with Gender Identity Disorder: A Descriptive Clinical Study

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The use of puberty-delaying or blocking hormonal treatment of adolescents with gender identity disorder (GID) has become increasingly common. In the present study, we examined demographic, behavior problem, and psychosexual measures to see if any of them correlated with the clinical decision to recommend, or not recommend, puberty-blocking hormonal therapy in a consecutive series of 109 adolescents (55 females, 54 males) with GID evaluated between 2000 and 2009. Of the 109 adolescents, 66 (60.6%) were recommended for puberty-blocking hormonal therapy and 43 (39.4%) were not. A combination of five (of 15) demographic, behavior problem, and psychosexual measures were identified in a logistic regression analysis to significantly predict this clinical recommendation. The quantitative data were complemented by clinical case descriptions and some follow-up information. We discuss our data in relation to the Dutch model of early biomedical treatment for youth with GID and consider areas that require further clinical and empirical examination.

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INTRODUCTION

For many years, it has been recognized that hormonal and sex-reassignment surgery (SRS) is the treatment of choice for many adults with gender identity disorder (GID). A number of literature reviews have documented that SRS reduces, if not eliminates, gender dysphoria in adults, which perhaps is the primary aim of such treatment (e.g., Gijs & Brewaeys, 2007; Green & Fleming, 1990; Pfäfflin & Junge, 1998). Only a small percentage of adults with GID who receive SRS regret it, suggesting that it is an effective biomedical treatment.

Over the past 15 years, there has been an increase in attention to the treatment of GID in adolescents (see, e.g., Cohen-Kettenis, van Goozen, & Cohen, 1998). In part, this has been the result of an apparent increase in the number of adolescents who seek out professional help for their gender dysphoria (Zucker, Bradley, Owen-Anderson, Kibblewhite, & Cantor, 2008). In contrast to natural history data on children with GID, which suggest that the majority will have a desistance of their gender dysphoria when followed up in adolescence or adulthood (Drummond, Bradley, Badali-Peterson, & Zucker, 2008; Green, 1987; Singh, Zucker, & Bradley, 2010c; Steensma, Biemond, de Boer, & Cohen-Kettenis, in press; Wallien & Cohen-Kettenis, 2008; Zucker, 2008; Zucker & Bradley, 1995), there is reasonable evidence that untreated gender dysphoria in adolescents is a relatively stable trait. Although some gender-dysphoric adolescents who present for clinical assessment do not necessarily desire hormonal treatment and/or SRS, the majority do.

Since the mid-1990s, one model of therapeutic care, developed by Dutch clinicians and researchers, has been to initiate the biomedical aspects of sex-reassignment in early- to mid-adolescence rather than to wait for the legal age of adulthood (18 years in many countries) or even later. After careful psychologic evaluation, adolescents deemed appropriate for such treatment are prescribed hormonal medication to delay or suppress somatic puberty (prior to the age of 16 years). If the gender dysphoria persists, then cross-sex hormonal therapy is offered at the age of 16 and, if the adolescent so desires, surgical sex change procedures are then offered at a lower bound age of 18 (see Cohen-Kettenis, Delemarre-van de Waal, & Gooren, 2008; Cohen-Kettenis & Pfäfflin, 2003; Cohen-Kettenis & van Goozen, 1998; Delemarre-van de Waal & Cohen-Kettenis, 2006; Gooren & Delemarre-van de Waal & Gooren, 1996).

The rationale for this treatment protocol includes the following: (1) there is the assumption that, for some adolescents with GID (and, perhaps, even

the majority), there is little systematic empirical evidence that psychologic interventions can resolve the gender dysphoria, even if the adolescent desires this (Cohen-Kettenis et al., 2008; Zucker, 2006; Zucker & Bradley, 1995); (2) the use of hormonal blockers can be helpful to the adolescent because it reduces the incongruence between the development of natal sex secondary physical characteristics (e.g., in males: facial hair growth, hair growth on other parts of the body, deepening of the voice; in females: breast development, menstruation) and the felt psychologic gender, thereby reducing stress; (3) reduction of the incongruence makes it easier for adolescents to present socially in the cross-gender identity/role (when they so desire), which is also helpful in reducing stress during the gender transition process (see, e.g., Smith, van Goozen, Kuiper, & Cohen-Kettenis, 2005a). Because the suspension of the patient's biological puberty reduces the preoccupation with it, it has also been argued that this affords the adolescent greater opportunity to explore his or her longer-term gender identity options in psychosocial counseling or psychotherapy in a more reflective and less pressured manner.

The sequence of this biomedical treatment is progressively irreversible. On the one hand, the use of hormonal medication to suppress or delay puberty is a reversible procedure; on the other hand, surgical interventions (e.g., in males, penectomy and castration; in females, bilateral mastectomy) are irreversible. Accordingly, if clinicians are going to support adolescents with gender dysphoria to move down a pathway that, in the end, results in a completely irreversible intervention, it is, as with adults, important to have a relatively high degree of confidence that the likelihood of regret will be low.

In the Dutch model, several factors have been identified as important in deeming an adolescent eligible for early biomedical treatment. According to Cohen-Kettenis et al. (2008), these include the following: (1) the presence of gender dysphoria from early childhood on; (2) an increase in the gender dysphoria after the first signs of puberty; (3) the absence of psychiatric comorbidity that would interfere with a diagnostic evaluation or treatment; (4) adequate psychological and social support during treatment; and (5) a demonstration of knowledge of the sex reassignment process.

Several empirical studies by the Dutch group have evaluated the effectiveness of biomedical interventions for adolescents with GID. Cohen-Kettenis and van Goozen (1997) assessed 22 adolescents with GID at a baseline mean age of 17.5 years (range, 15–20). Of these, 12 had been prescribed some form of hormonal therapy between the ages of 16 and 18 (e.g., hormonal blockers and/or cross-sex hormones). All 22 patients subsequently received at least some form of SRS and were followed up at a mean age of 22 (range, 19–27); the follow-up occurred at least one year after the SRS procedure (M interval, 2.6 years; range, 1–5 years). At the time of the baseline evaluation, eight other adolescents were not diagnosed with "transsexualism" and, therefore, were not recommended to start the "real-life"

test of living in the cross-gender role. Three other adolescents were diagnosed with "transsexualism," but their real-life test was postponed because of "severe concurring psychopathology and/or adverse social circumstances." Thus, in this sample, 22 (66.6%) of 33 adolescents received SRS at a relatively young age. A series of psychological tests were administered to the patients at baseline and at follow-up, including measures of gender dysphoria and psychopathology.

The pre-post design used by Cohen-Kettenis and van Goozen (1997) was applied to 19 of 22 patients who agreed to participate in the follow-up assessment. None of the patients regretted the SRS and, on the Utrecht Gender Dysphoria Scale (UGDS), a dimensional measure, showed a substantial decrease in their mean score between baseline and follow-up (the latter score was comparable to that of a nonpatient control group). On two measures of psychopathology and personality functioning (the Dutch version of the MMPI and the Dutch Personality Questionnaire), there were significant improvements between baseline and follow-up on 4 of 12 scales (e.g., increased Extroversion, decreased Inadequacy). There was no instance of a significant increase in psychopathology or personality dysfunction on any of the scales between baseline and follow-up; however, at the time of follow-up, 21% of the patients were unemployed and were not in school.

In a second study, Smith, van Goozen, and Cohen-Kettenis (2001) examined another cohort of 20 adolescents with GID who received early SRS and were compared to 14 nontreated and 6 delayed-treatment adolescents. Systematic follow-up data were not available on an additional 7 nontreated patients. Of the 21 nontreated patients, it was reported that they were not diagnosed with "transsexualism," and it was noted that many of these patients had "psychological or environmental problems" that were "too serious to make an accurate diagnosis." Thus, in this sample, 20 (42.5%) of 47 adolescents received SRS at a relatively young age. At baseline, the mean age of the treated group was 16.6 (range, 15–19) and, at follow-up, the mean age was 21.0 (range, 19–23). Of these, 10 patients had started on some form of hormone therapy between 16 and 18 years, and the follow-up occurred at least one year after the SRS procedure (M interval, 1.3 years; range, 1–4 years). At baseline, the mean age of the nontreated group was 17.3 years (range, 13.7–20.2) and at follow-up the mean age was 21.6 (range, 15.7–26.2). A series of psychological tests were administered to the patients at baseline and at follow-up, including measures of gender dysphoria and psychopathology.

None of the 20 treated patients regretted the SRS and on the UGDS showed a substantial decrease in their mean score between baseline and follow-up. Of the 14 nontreated patients, only one reported to have seriously regretted not having received SRS. The nontreated group also showed a significant decrease in their mean UGDS; however, the nontreated group had, on average, a significantly higher mean UGDS score than the treated group ($p < .0001$, our analysis based on data reported in Smith et al., 2001, Table 2).

On two measures of psychopathology (the Dutch versions of the MMPI and the Symptom Checklist-90), there were both similarities and differences between the treated and nontreated groups. On the MMPI, there were no significant changes in either group between baseline and follow-up on 5 scales; however, the nontreated group had significantly higher scores than the treated group on the Psychopathology scale at both baseline and at follow-up. On the SCL-90, the treated group showed significant improvement on 3 of 9 scales (Anxiety, Depression, and Hostility) whereas there were no significant changes in the nontreated group. On several of the SCL-90 scales, the treated group had significantly less symptomatology than the nontreated group.

In a third study, de Vries, Steensma, Doreleijers, and Cohen-Kettenis (2010b) examined a cohort of 70 adolescents with GID evaluated at a baseline mean age of 13.6 (SD = 1.8 years), who were subsequently started on a hormonal blocker at a mean age of 14.8 (SD = 1.1) and then followed-up at mean age of 16.6 (SD = 1.2), prior to the onset of cross-sex hormonal treatment. Of these 70 patients, 41–54 had data on measures of behavioral problems via the Child Behavior Checklist and the Youth Self-Report form, on specific measures of depression, anger, and anxiety, and a clinician rating on the Children's Global Assessment Scale, a measure of functional impairment. Between baseline and follow-up, there were significant reductions in psychopathology on 8 of 10 scales. Unlike the previous two studies, de Vries et al. did not report on the number of referred adolescents seen during the time frame of the study (2000–2008) who were not recommended for puberty-blocking hormonal treatment.

Several key conclusions can be drawn from these three studies of adolescents with GID:

1. For the adolescents recommended for early SRS, there was virtually no evidence of regret, suggesting that the intervention was effective. For adolescents recommended for puberty-blocking hormonal therapy, there was also evidence of improvement in general psychologic problems at follow-up and certainly no evidence of deterioration in psychological well-being.
2. For the adolescents not recommended for early SRS, the majority of patients were apparently content with this clinical decision (Smith et al., 2001), but such information was not reported on in the earlier study by Cohen-Kettenis and van Goozen (1997).
3. In the study by de Vries et al. (2010b), it should be noted that the absence of a comparison group of GID adolescents who were not placed on hormonal blockers makes it difficult to fully evaluate the specificity of this treatment in reducing general behavioral and emotional problems (it is conceivable, for example, that a trial of supportive therapy without any type of biomedical intervention might have been equally effective).

The use of hormonal blockers to treat adolescents with GID has been well-received in the professional literature (e.g., Baltieri, Cortez, & de Andrade, 2009; Giordano, 2008; Hembree et al., 2009; Spriggs, 2004). There are, however, a number of uncertainties that require further explanation. Perhaps the most acute issue is how to best identify adolescents deemed eligible for early biomedical treatment from those who are not. As noted earlier, one criterion used by the Dutch group is a history of gender dysphoria from early childhood on. Yet in clinics such as ours, we see some adolescents with GID who show little or absolutely no evidence of GID in early childhood. In many respects, these adolescents resemble the "late-onset" form of GID that has been described in the literature on adults (see Lawrence, 2010). The gender dysphoria appears to emerge, at least in the eyes of significant others (e.g., parents, therapists who have known the patient since childhood), only after the onset of puberty. It is not clear if this late-onset group should be deemed ineligible for early hormonal therapy. Other adolescents have a history of pervasive cross-gender behavior during childhood but without apparent gender dysphoria until adolescence (see, e.g., Zucker, 2006, Case 1, pp. 539–540). It is unclear if a childhood history of pervasive cross-gender behavior without the explicit wish to be of the other gender would count as an example of "early-onset" in the Dutch model.

Another issue concerns the diagnosis of GID itself. In the first two studies by the Dutch group, the diagnostic term "transsexualism" was used, but it is unclear if this was used synonymously with the *Diagnostic and Statistical Manual* (DSM-IV) diagnosis of GID or if something else was meant. In our clinic, virtually all of the adolescents that we see who present with gender dysphoria meet the DSM criteria for GID, but there is still variation in severity. It is not entirely clear if such variation should be taken into account when making a recommendation for hormonal treatment. In Smith et al. (2001, Table 1), virtually all patients in the nontreated group were noted to *not* have the diagnosis of "transsexualism," but it is unclear if this meant that the patients did not meet the DSM-IV criteria for GID or something else. If these adolescents did not have a GID, it is reasonable to ask why they had been referred to a specialized gender clinic. It is, of course, possible that the nontreated group had some traits suggestive of a GID but were below the threshold for the diagnosis, but this was not made clear in the Smith et al. report.

A final issue that deserves consideration concerns the Dutch group's view on the role of psychiatric comorbidity in making treatment decisions about early biomedical interventions. It is, for example, unclear what is meant when it is stated that the presence of such comorbidity interferes with a diagnostic evaluation or in what ways the presence of such comorbidity interferes with treatment. In Smith et al. (2001, Table 1), brief descriptive information was provided about psychiatric comorbidity. For example, Case 8 was diagnosed with schizophrenia, which might well be a reason to delay treatment of the gender dysphoria (the patient subsequently committed

suicide). Case 14 was noted to have a pathological gambling problem and had dropped out of school. Perhaps this is an example of behavior problems that would interfere with treatment compliance. Three patients were noted to have a Pervasive Developmental Disorder (PDD), but it was not made clear why the presence of a PDD should be a rule out for early hormonal treatment (see, e.g., de Vries, Noens, Cohen-Kettenis, van Berckelaer-Onnes, & Doreleijers, 2010a). For a number of other cases, no specific psychiatric comorbidity was noted, and Smith et al. did not provide any specific information about the kinds of psychiatric comorbidity in their early-treated group. Inspection of the psychopathology data in Smith et al. (2001, Table 2) shows a lot of overlap between the treated and nontreated groups, suggesting that psychiatric comorbidity is a difficult parameter per se to use in deciding whether or not to institute early treatment. On this point, more detailed clinical examples would be useful.

The purpose of the present study was to provide descriptive information on our clinic's therapeutic recommendation to institute puberty-blocking hormonal treatment in a cohort of adolescents with GID. Adolescents who were recommended for this treatment were compared to adolescents who did not receive this recommendation with regard to demographic, behavior problem, and psychosexual measures to see if the clinical decision was reliably associated with any of these quantitative parameters. We also conducted a logistic regression analysis to identify how these parameters worked in concert in predicting the clinical recommendation regarding hormonal treatment. Last, this article provides some clinical vignettes to characterize, in a qualitative manner, the decision whether or not to recommend hormonal therapy as well as to provide some preliminary information on the course of our patients' gender development.

METHOD

Participants

The patients were 109 adolescents (54 males, 55 females) referred consecutively to, and then assessed in, the Gender Identity Service, which is housed within the Child, Youth, and Family Program at the Centre for Addiction and Mental Health, between 2000 and 2009. Referrals were initiated either by the youth or by parents or professionals (e.g., mental health clinicians, pediatricians, teachers). During this same time period, our clinic also evaluated another 56 adolescent patients who were referred for other reasons: adolescents with transvestic fetishism without co-occurring gender dysphoria (N = 35), adolescents with cross-gender behavior but without an explicit desire to be of the other sex and who had not yet differentiated a sexual orientation (N = 6), and adolescents with a gay/lesbian or bisexual sexual orientation (N = 15), which was experienced as ego-dystonic, was of concern to the

parents, and/or was associated with psychosocial problems, such as risky sexual behavior. These latter three groups of patients were not the focus of the present study.

Procedure and Measures

Youth and their families (or a guardian, such as a child protection agency worker) were seen for a diagnostic assessment that typically involved a family interview, interviews with parents, and an interview with the youth. Parents were not involved in the assessment if either the youth did not wish to have them participate or the youth was in-care (e.g., in residential treatment) or living independently and the parents were not available to be seen. As part of the assessment, the youth were seen for psychological testing, which consisted of a battery of tests and tasks, including cognitive testing, projective testing, and gender-specific measures.

Demographics

Eight demographic variables were coded for the present study: (1) the patient's biological sex,[1] (2) age at assessment, (3) year of assessment (YOA), (4) Full-Scale IQ on an age-appropriate Wechsler Intelligence Scale, (5) parents' social class (Hollingshead, 1975), (6) parents' marital status, (7) race/ethnicity, and (8) whether or not the youth was in-care (e.g., via a child protection society and living in a group home, residential treatment, a foster family).

Behavior Problems

The Child Behavior Checklist (CBCL) is a parent-report questionnaire designed to assess behavior problems in children and youth (Achenbach & Edelbrock, 1983). Each of 118 items was rated on a 3-point scale (0–2) for frequency of occurrence, where $0 =$ not true, $1 =$ somewhat or sometimes true, and $2 =$ very true or often true. Revised versions of the CBCL have moved the upper-bound for age to 18 years from 16 years (Achenbach, 1991a). For adolescents over the age of 18, the Adult Behavior Checklist for Ages 18–59 (Achenbach & Rescorla, 2003) was used. We utilized maternal ratings for the majority of patients but, if the mother was not available, we utilized ratings by a stepmother, adoptive mother, aunt, grandmother or a mental health professional if the youth was in-care. The CBCL has two specific items pertaining to cross-gender behavior: "Behaves like opposite sex" (Item 5) and "Wishes to be of opposite sex" (Item 110). In addition to these items, it is not unusual for parents to endorse other items on the CBCL that reflect a youth's cross-gender identification. For example, a parent might endorse "Strange ideas" (Item 85) and then provide an example such as "He

wants to die and come back as a girl." For the analyses reported here, these items were scored as 0's to avoid any artificial inflation of general behavior problems. For the present study, we coded for the sum of items rated as a 1 or a 2 and the percentage of patients with a Total *T* score in the clinical range (>90th percentile).

The Youth Self-Report (YSR) is a self-report questionnaire designed for youth between the ages of 11 and 18 (Achenbach, 1991b; Achenbach & Edelbrock, 1986). For adolescents over the age of 18, the Adult Self-Report for Ages 18–59 (Achenbach & Rescorla, 2003) was used. On the YSR, a total of 118 items were rated on a 3-point scale (0–2) for frequency of occurrence; of these, 102 items constitute potential behavior problems (16 other items are considered to be "socially desirable" items). The YSR also contains the same two gender-specific items (Item 5: "I act like the opposite sex" and Item 110: "I wish I were of the opposite sex") and these, along with any other responses specifically pertaining to gender identity issues, were scored as 0s to avoid any artificial inflation of general behavior problems. For the present study, we coded for the sum of items rated as a 1 or a 2 and the percentage of patients with a Total *T* score in the clinical range (>90th percentile).

Psychosexual Variables

For the present study, we examined six psychosexual measures that are part of our assessment protocol.

The Gender Identity Questionnaire for Adolescents (GIQ-Ad) is a 13-item parent-report questionnaire pertaining to various aspects of concurrent sex-typed behavior (e.g., sex-of-peer affiliation preference, masculine vs. feminine interests, cross-dressing, the desire to be of the other sex). Eleven of the items were rated on a 5-point scale (e.g., from "never" to "every day"), one item was rated on a 4-point scale, and one item was calculated as a difference score based on the number of male versus female close friends. Factor analysis of the GIQ-Ad was based on a sample of 371 youth, including youth with GID, transvestic fetishism, and sibling or clinical controls. A principal axis factor analysis identified a one-factor solution, accounting for 37.46% of the variance. A total of 10 items from the questionnaire, all with factor loadings ≥.38 (range, .38–.82), were used to construct a unit-weighted mean total score, with a lower score reflecting more cross-gender behavior. Cronbach's alpha for this measure was .88. More detailed psychometric information on the GIQ-Ad is reported elsewhere (Zucker, Bradley, Owen-Anderson, & Singh, 2010).

With the Draw-a-Person test, after each youth had drawn a house and a tree, he or she was asked to "draw a person" and to identify its sex. The youth was then asked to draw a person of the sex opposite to that of the first drawing. The sex of the first-drawn person was recorded. If the youth gave an ambivalent or vague response (e.g., "It could be either" or "I don't know"),

he or she was asked to think a bit and then to decide if the drawing was that of a boy/man or girl/woman. In nonclinical populations of adolescents, it has been shown that the sex of the first drawn person is reliably associated with the drawer's sex (Bieliauskas, 1960; Butler & Marcuse, 1959; Swensen & Newton, 1955).

The Gender Identity/Gender Dysphoria Questionnaire for Adolescents and Adults (GIDYQ) is a 27-item questionnaire pertaining to concurrent gender identity and gender dysphoria (Deogracias et al., 2007). Item content was based on prior measures, expert panels, and clinical experience. There are parallel versions for males and females. Each item was rated on a 5-point response scale ranging from *Never* to *Always* based on a time frame of the past 12 months. Item examples include: "In the past 12 months, have you felt unhappy about being a boy?" and "In the past 12 months, have you wished to have an operation to change your body into a man's (e.g., to have your breasts removed or to have a penis made)?" Factor analysis identified a strong one-factor solution that accounted for 61.3% of the variance. All 27 items had factor loadings $\geq.30$ (median, .86; range, .34–.96). Psychometric evidence for discriminant validity, sensitivity and specificity, and clinical utility have been reported elsewhere (Deogracias et al., 2007; Singh et al., 2010a; Singh, McMain, & Zucker, 2010b). Participants' GIDYQ total score was calculated by summing scores on the completed items and dividing by the number of marked responses.

The Recalled Childhood Gender Identity/Gender Role Questionnaire (RCGI) (Zucker et al., 2006) is a 23-item questionnaire pertaining to various aspects of sex-typed behavior as well as relative closeness to mother and father during childhood. Items were rated on a 5-point response scale. Each participant was instructed to make ratings for their behavior as a child ("between the years 0 and 12"). Factor analysis identified two factors, accounting for 37.4% and 7.8% of the variance, respectively (all factor loadings $\geq.40$). Factor 1 consisted of 18 items that pertained to childhood gender role and gender identity, and Factor 2 consisted of three items that pertained to parent-child relations (relative closeness to one's mother vs. father). Information on normative sex differences and discriminant validity has been reported elsewhere (Drummond et al., 2008; Singh et al., 2010a; Zucker et al., 1996, 2006). For the present study, the mean Factor 1 score was computed for each participant.

The Erotic Response and Orientation Scale (EROS) is a 16-item self-report measure assessing sexual orientation in fantasy over the past six months (Storms, 1980). Half of the questions pertained to heterosexual fantasy (e.g., for females, "How often have you had any sexual feelings (even the slightest) while looking at a boy?") and the other half pertained to homosexual fantasy (e.g., for females, "How often have you had any sexual feelings (even the slightest) while looking at a girl?"). Each item was rated on a 5-point scale for frequency of occurrence, ranging from "none" to "almost

every day." Mean homoerotic and heteroerotic fantasy scores were derived for each participant. Previous use of the EROS has shown good evidence of discriminant validity (Drummond et al., 2008; Storms, 1980; Zucker et al., 1996). Youth were classified as homosexual in relation to their birth sex if their mean homoerotic score exceeded their mean heteroerotic score; youth were classified as nonhomosexual (i.e., heterosexual, bisexual, or asexual) in relation to their birth sex if their mean homoerotic score was equal to or less than their mean heteroerotic score.

The Sexual History Questionnaire (SHQ) is a 20-item self-report measure assessing sexual orientation in behavior. Items were selected from Langevin's (1985) longer 36-item SHQ for males and a parallel version was created for females (see Drummond et al., 2008). Half the items were about sexual experience with boys and half the items were about sexual experience with girls. For each item, the participant was asked to report his or her sexual behavior experience since the age of 13. Sample items include: "How many girls have you touched on the naked breasts since the age of 13?" and "Since the age of 13, how many boys have you touched on their private parts with your hands?" Each item was rated on a 5-point response scale (where 1 = "none or never," 2 = "only one," 3 = "2–5", 4 = "6–10", and 5 = "11 or more"). In the present study, Cronbach's alpha was .93. As for the EROS, youth were classified as homosexual in relation to their birth sex if their mean homoerotic score exceeded their mean heteroerotic score; youth were classified as nonhomosexual in relation to their birth sex if their mean homoerotic score was equal to or less than their mean heteroerotic score (i.e., heterosexual, bisexual, or asexual).

Hormonal Blocker Treatment Recommendation

At the end of the clinical assessment, the attending clinician (KJZ, SJB, or AO-A) provided the youth and his or her family with feedback, including diagnostic impressions and therapeutic recommendations. For the present study, we reviewed each clinical file and coded whether or not the attending clinician recommended a trial of hormonal therapy to suppress somatic masculinization (in the case of biological males) or somatic feminization (in the case of biological females). For the present study, a recommendation against hormonal blockers was dummy coded as 0 and a recommendation for hormonal blockers was coded as 1.

RESULTS

After the baseline assessment, hormonal therapy to suppress the patient's biological puberty was recommended for 66 (60.6%) youth and not recommended for 43 (39.4%) youth. In the following series of analyses, we

TABLE 1 Demographic Characteristics as a Function of Hormonal Blocker Recommendation

Variable		Hormonal Blocker Recommendation		*t* or χ^2	*p*
		Yes	No		
Age (in yrs)	M	17.01	16.59	1.23	ns
	SD	1.74	1.74		
	N	66	43		
Sex				7.95	.005
Male	N (%)	25 (46.3)	29 (53.7)		
Female	N (%)	41 (74.5)	14 (25.5)		
Year of Assessment	M	2005.83	2005.63	<1	ns
	SD	2.70	2.45		
	N	66	43		
Full-Scale IQ[a]	M	104.25	101.60	<1	ns
	SD	17.91	18.60		
	N	65	42		
Social Class[b]				4.04	.132
I-II	N (%)	38 (69.1)	17 (30.9)		
III	N (%)	17 (56.7)	13 (43.3)		
IV-V	N (%)	11 (45.8)	13 (54.2)		
Parent's Marital Status[c]				<1	ns
Both Parents	N (%)	33 (64.7)	18 (35.3)		
Other	N (%)	33 (56.9)	25 (43.1)		
Ethnicity				2.45	.117
Caucasian	N (%)	47 (56.0)	37 (44.0)		
Other	N (%)	19 (76.0)	6 (24.0)		
In Care				3.11	.077
Yes	N (%)	6 (37.5)	10 (62.5)		
No	N (%)	60 (64.5)	33 (35.5)		

Note. Row values add up to 100% of the sample.
[a]Participants were administered age-appropriate versions of the Wechsler Intelligence scales.
[b]Hollingshead's (1975) Four-Factor Index of Social Status (absolute range, 8–66); I-II (40–66), III (30–39); IV-V (8–29). Higher scores represent a combination of greater educational attainment and higher occupational status.
[c]For marital status, the category "Other" included the following family constellations: single parent, separated, divorced, widowed, reconstituted (e.g., mother and step-father), etc.

examined whether or not there were any significant differences on the demographic variables, the behavior problem measures, and the psychosexual measures as a function of this recommendation. Tables 1 and 2 show the quantitative results as a function of the hormonal treatment recommendation, along with the statistical test value and *p* value.

Demographic Variables

For the eight demographic variables, there was only one significant difference as a function of the hormonal treatment recommendation: biological females were significantly more likely to receive a recommendation for hormonal suppression than biological males. As can be seen in Table 1, there was also a borderline statistical effect for the in-care variable: youth who were in-care

TABLE 2 Behavior Problem and Psychosexual Measures as a Function of Hormonal Blocker Recommendation

Variable		Hormonal Blocker Recommendation			
		Yes	No	t or χ^2	p
CBCL: Sum Items[a]	M	61.02	63.59	<1	ns
	SD	27.17	32.55		
	N	62	39		
% Clinical Range		83.9	69.2		
YSR: Sum Items[b]	M	60.95	75.17	2.78	.006
	SD	24	28		
	N	65	42		
% Clinical Range		40.0	42.9		
Draw-a-Person					
Cross-Sex Drawn First	N (%)	47 (69.1)	21 (30.8)	3.43	.064
Same-Sex Drawn First	N (%)	18 (48.6)	19 (51.3)		
GIQ-Ad[c]	M	2.17	2.94	5.06	<.001
	SD	0.74	0.70		
	N	60	37		
GIDYQ[d]	M	2.21	2.61	4.74	<.001
	SD	0.35	0.47		
	N	60	39		
RCGI[e]	M	2.05	2.84	5.48	<.001
	SD	0.67	0.79		
	N	65	42		
Sexual Orientation (in fantasy)				7.51	.006
Homosexual	N (%)	45 (72.6)	17 (27.4)		
Non-Homosexual	N (%)	20 (44.4)	25 (55.6)		
Sexual Orientation (in behavior)				12.96	<.001
Homosexual	N (%)	43 (78.2)	12 (21.8)		
Non-Homosexual	N (%)	22 (42.3)	30 (57.7)		

[a]Absolute range, 0–236
[b]Absolute range, 0–204
[c]Absolute range, 1–5
[d] For this measure, the absolute range for 9 of the items was 1–5, but there was no formal absolute range for the difference score between number of male vs. female friends.
[e]Absolute range, 1–5

were less likely to receive a recommendation for hormonal suppression than were youth not in-care. Nonwhite youth were also more likely to receive a recommendation for hormonal therapy than Caucasian youth, as were youth from a higher social class background, but these differences only approached significance, with p values of .11 and .13, respectively. Age at assessment, year of assessment, Full-Scale IQ, and parent's marital status did not differ significantly as a function of hormonal treatment recommendation.

Behavior Problems

There was no significant difference on the CBCL mean sum score as a function of hormonal treatment recommendation, but youth not recommended

for hormonal therapy had a significantly higher YSR mean score than youth who were recommended.

Psychosexual Variables

All of the psychosexual variables examined in the current study showed significant differences as a function of our recommendation for hormonal therapy. Youth who were recommended for hormonal therapy were more likely to draw an opposite sex person first on the DAP, had, on average, a more extreme mean score on the parent-report GIQ-Ad measure of concurrent cross-sex-typed behavior, self-reported more gender dysphoria on the GIDYQ, recalled more cross-gender behavior during childhood on the RCGI, and were more likely to be classified as homosexual (on both the EROS and the SHQ) than as non-homosexual.

Logistic Regression

In order to examine which of our demographic, behavior problem, and psychosexual variables might collectively contribute to the hormonal blocker recommendation, all 16 measures were examined in a logistic regression analysis with the hormonal blocker recommendation as the criterion variable. Because there were missing data for some of the variables (see Tables 1–2), we used the multiple imputation procedure in SPSS (Version 17) to produce the regression equation (see Graham, 2009).[2]

The results of the logistic regression analysis are shown in Table 3. Of the 16 predictor variables, 5 were significant at $p < .10$, with p values ranging from .016 to .096: ethnicity, the GIDYQ, the GIQ-Ad, the RCGI, and the YSR sum score. A recommendation for hormonal blockers was more likely to be made when the patients were of a visible minority ethnicity, when parent-report indicated more concurrent cross-gender behavior, when the patients self-reported more concurrent gender dysphoria, recalled more cross-gender behavior in childhood, and had a lower YSR behavior problem sum score.[3]

Descriptive and Qualitative Clinical Data

In this section, we provide descriptive information on what we know about the subsequent life-course of our patients following the baseline assessment, when this information was available to us. Of course, this information should be viewed as provisional, since some patients were only recently assessed; the longest interval between assessment and follow-up was 10 years, since the lower bound YOA was 2000. We also provide clinical vignettes to illustrate our reasoning behind the decision to recommend or not recommend hormonal therapy to suppress the patient's biological puberty.

TABLE 3 Logistic Regression Predicting Hormonal Recommendation

Variable	β	SE	p
GIQ-Ad	1.63	0.67	.016
GIQAA	2.79	1.23	.025
RCGI	1.17	0.58	.045
Ethnicity	1.91	0.95	.047
YSR Sum	−0.02	0.01	.096
Sex	0.01	0.79	.990
Age at assessment	0.22	0.22	.319
YOA	−0.08	0.13	.532
Full-Scale IQ	0.03	0.03	.295
Parent's Marital Status	−0.53	0.76	.478
Social Class	−0.76	0.49	.127
In-Care	0.13	1.19	.910
CBCL Sum	−0.01	0.01	.419
Draw-a-Person	−1.20	0.91	.193
EROS	−0.18	0.82	.820

Note. Dichotomous variables were dummy coded. For Ethnicity, 1 = White; 2 = Visible Minority; for Sex, 1 = female; 2 = male; for Parent's Marital Status, 1 = Two-parent; 2 = Other; for Social Class, 1 = I–II, 2 = III, 3 = IV-V (see Table 1); for In-Care, 1 = Not In-Care; 2 = In-Care; for Draw-a-Person, 1 = same-sex person drawn first; 2 = opposite-sex person drawn first; for EROS, 1 = non-homosexual sexual orientation (in relation to birth sex), 2 = homosexual orientation (in relation to birth sex).

Patients Who Were Recommended for Hormonal Therapy at Baseline

Of the 38 female patients for whom we recommended hormonal therapy to suppress somatic feminization (excluding the additional three patients who were already receiving cross-sex hormonal therapy at the time of the baseline evaluation), 24 (63.1%) started the treatment, 6 (15.7%) decided against it, and we did not have follow-up information for the remaining 8 (21.0%). Of the 23 male patients for whom we recommended hormonal therapy to suppress somatic masculinization (excluding two additional patients who were either already on blockers or were receiving cross-sex hormonal therapy at the time of the baseline evaluation), 16 (69.5%) started the treatment, 2 (8.6%) decided against it, 2 (8.6%) did not attend for a feedback session and thus did not receive our recommendation, and we did not have follow-up information for the remaining 3 (13.0%).

Patients Who Were Not Recommended for Hormonal Therapy at Baseline

Of the 14 female patients for whom we did not recommend hormonal therapy at the baseline assessment, there was no subsequent change in this recommendation for 12 (for 2 other patients, we had no follow-up data available). Of the 29 male patients for whom we did not recommend hormonal therapy at the baseline assessment, we subsequently recommended blockers for 5 patients (a sixth patient went on blockers at the

recommendation of his therapist), made no change in this recommendation for 17, one patient committed suicide after our assessment was completed (while on a waiting list for counseling at a mental health clinic near his place of residence and who had made at least one serious suicide attempt prior to our assessment), and for 5 other patients, we had no follow-up data.

Case Vignettes: Blockers Not Recommended

Rhianna was a 16-year-old Caucasian biological female with a Full-Scale IQ of 88. She lived with her parents and a younger brother. Parent's social class was middle-class. Unlike many female adolescents with GID, Rhianna did not present with a phenotypic masculine appearance (e.g., short hair, male-typical clothing style). Rather, Rhianna had more of a "goth" look and would be perceived by naive others as an adolescent girl. In terms of her developmental history, there was no evidence for cross-gender identification or GID in childhood. At the time of assessment, Rhianna was in a romantic/sexual relationship with a gay adolescent male and the main reason that she gave for wanting a sex-change was that she feared that if she did not become male that she might lose her boyfriend. Rhianna self-identified as bisexual. Apart from Rhianna's gender dysphoria, her psychiatric history was complex. At the time of referral, she was depressed and suicidal. Her grades had dropped precipitously since entering high school. In general, Rhianna felt quite alienated from other youth her age. Rhianna reported experimenting with a lot of recreational drugs (e.g., marijuana, Ecstasy, LSD, and Oxy-Contin). Rhianna reported some auditory hallucinations. Rhianna read a lot about "abnormal psychology" and wondered if she had schizophrenia. She reported an intense dislike of her parents and only grudgingly consented to their participation in our assessment. At the time of referral, she had been prescribed Prozac by the family physician. For a long time, the parents noted that Rhianna had the propensity to "take on other people's personalities." As a child, she would take on the characters of bad witches or characters from Disney movies and then would remain in this "role" for a long time. A year prior to the assessment, Rhianna became "obsessed" with a character from a current film and, according to the parents, had now taken on this character's personality. We did not recommend hormonal blockers for Rhianna. We felt that there were several reasons to be cautious about this: (1) her primary reason for wanting a sex change struck as dubious (i.e., to reduce the likelihood that her gay boyfriend would reject her); (2) the absence of a history of cross-gender identification and GID in childhood caused us to wonder if her current gender dysphoria was a kind of fantasy solution to other problems and/or that it was not a fixed identity status, immutable to psychosocial interventions; and (3) her very vulnerable psychiatric state, including a query of a psychotic process *in statu nascendi*. Rhianna entered supportive

psychotherapy and was treated pharmacologically with risperidone. At age 20, the time of last follow-up, the gender dysphoria had desisted, Rhianna was in a heterosexual relationship, and was attending college to complete the requirements for a specific occupation. The psychiatrist who has followed Rhianna has suggested a working diagnosis of bipolar disorder, which has been successfully controlled with medication.

Melvin was a 15-year-old Caucasian biological male with a Full-Scale IQ of 87. He had lived with his mother and an older brother. Socioeconomic background of the family was lower class. Due to physical abuse, his mother left his father shortly after Melvin was conceived, and there has never been any contact with the father. His mother has had chronic and severe mental health problems. Due to the severe family dysfunction, Melvin has been in the care of a child protection agency since the age of 5. He has had a long and complex psychiatric history, with multiple admissions to inpatient units. Various psychiatric diagnoses had been considered: Conduct Disorder, Attention-Deficit Hyperactivity Disorder, Asperger's Disorder, Reactive Attachment Disorder, and a learning disability. Over the years, he had been prescribed various psychotropic medications. At the time of assessment, Melvin presented in the female gender role, wearing casual feminine clothing and with shoulder-length hair. It was our impression that Melvin would be perceived by naive others to be an adolescent female, but his given name would "mark" him as a boy. There was no childhood history of cross-gender identification or GID. Indeed, the extensive psychiatric reports available to us from Melvin's childhood made no reference at all to gender identity issues. Melvin reported an adolescent onset of his gender dysphoria, with co-occurring transvestic fetishism and autogynephilia. Sexual orientation was gynephilic. Melvin was taken into care for various reasons, including the concern that his mother would kill him if she discovered that he was cross-dressing. At the time of our assessment, Melvin's living situation was precarious as his volatile behavior made it very difficult for him to be managed in either group homes or in foster families. He barely attended school and was failing all of his subjects. We did not recommend hormonal blockers for Melvin. Although Melvin reported intense gender dysphoria, we were concerned that his living situation was unstable and that his volatile behavior would make it difficult to explore in supportive therapy the gender identity issues. Indeed, after our assessment, Melvin was arrested for assaulting his foster parents, with whom he had been placed, and was court-ordered to a juvenile detention facility (that provided psychiatric care) for a year. At the age of 17, Melvin had been placed in a foster family that was supportive of his desire to live in the female gender role. Although his general psychiatric well-being was still unstable, we recommended hormonal blockers at this point in time, along with the recommendation for continued supportive therapy to help manage Melvin's volatility and to help him cope in special education in high school.

Case Vignettes: Blockers Recommended

Beth was a 13-year-old Caucasian biological female with a Full-Scale IQ of 101. She lived with her mother and two younger siblings. Socioeconomic background of the family was middle class. Her parents, who had been in a common-law relationship, separated when Beth was 6, following a long period of marital discord, including physical abuse of the mother by the father. At the time of assessment, Beth presented as an overweight youth, whose phenotypic social appearance was stereotypically masculine (in terms of hair-style and clothing style). Because Beth has a female-typical name, she was known to her schoolmates as a girl, but naive others would have perceived her to be a young adolescent boy. Beth had a childhood history of marked cross-gender behavior, which her mother understood to be "tomboyism" that she presumed Beth would "grow out of." During childhood, the mother did not recall that Beth ever verbalized the desire to be a boy. By middle school, Beth had become increasingly oppositional and depressed. The mother-daughter relationship was extremely volatile and conflicted. Because of Beth's mental state, including suicidal feelings, she was admitted to a psychiatric unit for youth. In the course of this treatment, an astute clinician gently explored with Beth her feelings about being a girl and she was able to acknowledge intense feelings of gender dysphoria. This lifted Beth's depression and a referral was made to our clinic for further evaluation. After our assessment, we recommended hormonal therapy to suppress somatic feminization and a trial of supportive psychotherapy to explore further Beth's gender identity, help her to deal with her anxiety and depression (which was also being treated with a selective serotonin reuptake inhibitor), work with the mother in helping Beth negotiate a social gender change within the family and at school, and to explore with Beth her sexual orientation (which was "asexual" at the time of the baseline assessment). We were of the view that the supportive psychotherapy could, among other things, explore with Beth whether she could imagine the idea of a lesbian sexual identity as opposed to moving towards gender reassignment.[4] This was not "our" goal, but we viewed it as an important parameter to examine since Beth's sexual orientation was undifferentiated at the baseline assessment. At age 16, the time of her last follow-up, Beth has successfully transitioned to the male gender role (including a legal name change to Seth), has progressed to cross-sex hormonal therapy, functioned reasonably well at school, and reported an emerging gynephilic sexual orientation in fantasy; unfortunately, Seth struggles with his weight (281 lbs.) and requires on-going nutritional counseling.

Wayne was a 16-year-old Black Caribbean biological male with a Full-Scale IQ of 68. He lived with his mother and several siblings. Socioeconomic background of the family was lower middle class. Wayne's parents separated when he was 12, in part due to his father's excessive gambling, which left

the family in dire financial straits. His mother had a history of brief psychotic episodes, although she was stable at the time of our assessment. At assessment, Wayne presented in the male gender role with notable "effeminate" mannerisms (he did, however, make efforts to pass in the female gender role when not in the presence of his family). Wayne had a history of childhood cross-gender identification although he had never verbalized the desire to be a female until early adolescence. Sexual orientation was androphilic. Wayne did not do well in school and was often ostracized because of his effeminacy. He was quite depressed at the time of our evaluation. The parents were distraught about Wayne's desire to be a girl. Although they were not aware of his sexual orientation, they reported that homosexuality was completely unacceptable because of their cultural and religious heritage (cf. Rosario, 2009). We hypothesized that the combination of internalized, familial, and cultural-religious homophobia was a contributing factor in Wayne's gender dysphoria, since living in the female gender role would "normalize" his sexual orientation. We recommended hormonal therapy to suppress Wayne's somatic masculinization and also saw him in supportive psychotherapy. Shortly after treatment began, Wayne began to live more fully in the female gender role and adopted the given name of Jane. The treatment focused on Jane's difficulties at school, worked on her mood state, examined whether or not she could entertain identifying as a gay male, and explored with Jane her propensity to put herself at risk in sexual situations (e.g., meeting heterosexual men in clubs who were not aware of her biological sex). At age 20, the time of her last follow-up, Jane was living with her mother, was working, was less depressed, and had been living in the female gender role for about three years (with a legal name change). Cross-sex hormonal therapy was instituted at the age of 18. Jane hopes to obtain sex-reassignment surgery in the next couple of years.

DISCUSSION

The primary aim of the present study was to examine whether or not our clinical recommendation to institute hormonal-blocking treatment for adolescents with GID was reliably associated with a series of demographic, behavior problem, and psychosexual measures that were part of our diagnostic assessment protocol. In this consecutive series of adolescents, hormonal blockers were recommended (although not necessarily instituted) for 60.6% of the sample. This percentage was similar to the 66.6% reported on by Cohen-Kettenis and van Goozen (1997) but somewhat higher than the 42.5% reported on by Smith et al. (2001).

The clinical decision to recommend hormonal blockers was reliably associated with several of our quantitative measures. We were more likely to recommend blockers for biological females and less likely to recommend

blockers for youth who were in-care (Table 1). None of the other demographic variables (age at assessment, YOA, IQ, parent's social class and marital status, and ethnicity) were significantly associated with this recommendation. We were less likely to recommend blockers for youth who reported, on average, higher mean behavior problem scores on the YSR, but there was no significant difference in this recommendation as a function of the parent-report CBCL score (Table 2). The recommendation for blockers was also reliably associated with more extreme concurrent and recalled gender dysphoria and cross-gender behavior (across a number of measures) and for youth with a homosexual sexual orientation (in relation to their birth sex) (Table 2). In the logistic regression, five variables (out of 15) were predictive of our recommendation for hormonal treatment, including several measures related to degree of cross-gender behavior and gender dysphoria, a lower YSR score, and a visible ethnic minority status (Table 3).

It should be recognized that the current data set does not provide a formal algorithm that can be used in considering hormonal blockers for adolescents with GID, but the data provide suggestive evidence of the factors that seemed related to our clinical decision. It was clear, for example, that we were more likely to recommend blockers for those adolescents who had both a history and a concurrent clinical presentation of relatively more extreme cross-gender behavior and gender dysphoria. This seems consistent with Cohen-Kettenis et al.'s (2008) argument that the presence of gender dysphoria from "early childhood on" is one consideration for the institution of early hormonal treatment.

In Table 2, it can be seen that we were also more likely to recommend blockers for adolescents with a homosexual sexual orientation. Sexual orientation did not, however, survive as a significant predictor in the logistic regression (Table 3). There is considerable evidence that a homosexual sexual orientation, compared to a non-homosexual sexual orientation, among both adolescents and adults with GID, is associated with more recalled cross-gender behavior in childhood although not necessarily correlated with degree of concurrent gender dysphoria (Deogracias et al., 2007; Singh et al., 2010a; Smith et al., 2005a). It would appear, therefore, that our recommendation for hormonal blockers was more strongly linked to our patients' degree of gender dysphoria and recalled cross-gender behavior than sexual orientation per se.

One important difference between our adolescent sample and the adolescent samples reported on by the Dutch group is that we see many adolescents who do not have a homosexual sexual orientation whereas this appears to be quite uncommon in the Dutch samples. The reasons for this are not clear because many Dutch adults with gender dysphoria have a nonhomosexual sexual orientation (Smith et al., 2005a; Smith, van Goozen, Kuiper, & Cohen-Kettenis, 2005b). Because many adolescents with a non-homosexual sexual orientation do not have the "early-onset" form of GID

(cf. Lawrence, 2010; Smith et al., 2005b), it is important to recognize that "late-onset" GID was not necessarily a rule-out for hormonal blockers in our sample (cf. Cohen-Kettenis et al., 2008).

We were also more likely to recommend blockers for female patients than male patients, but biological sex did not survive the logistic regression as a significant predictor. It is likely the case that biological sex was related to our clinical recommendation because, in our sample, females reported, on average, more recalled cross-gender behavior and concurrent gender dysphoria and were more likely to have a homosexual sexual orientation than males (Singh et al., 2010a).

As noted earlier, the Dutch group is less likely to recommend early hormonal therapy when the patient has severe concurrent psychopathology. Our data were somewhat consistent with this in that we were less likely to recommend early hormonal therapy for youth who had higher scores on the YSR and youth who were in-care (a likely proxy for comorbidity), but the recommendation was unrelated to CBCL scores. Thus, the evidence was inconsistent about the role of comorbid psychopathology in making this clinical recommendation. It is likely that measures such as the YSR and CBCL are not precise enough with regard to assessing the potentially interfering role of concurrent psychopathology. Accordingly, in future studies, it would be important to augment these quantitative metrics with other measures, such as degree of functional impairment, and qualitative analysis to identify what exactly it is about co-occurring psychopathology that is linked to decisions about early biomedical treatment. On this latter point, the clinical material from the Dutch group is fairly sketchy (see Smith et al., 2001); in the present study, we attempted to provide more detailed qualitative information for two adolescents for whom we did not recommend hormonal treatment, but clearly more systematic data are urgently needed.

Finally, the logistic regression identified ethnicity as a significant predictor of our hormonal treatment recommendation, with youth of non-White ethnicity more likely to be recommended for suppression. It is not entirely clear how to understand this finding. On the one hand, ethnicity was not significantly correlated with any of our measures of gender dysphoria or cross-gender behavior and our measures of behavior problems (data not shown). On the other hand, non-White ethnicity was marginally correlated with both Full-Scale IQ ($r = -.18$, $p = .064$) and a homosexual sexual orientation on the EROS ($r = .19$, $p = .055$). IQ and sexual orientation (via the EROS) were not, however, significant predictors of our hormonal treatment recommendation in the logistic regression (Table 3). Perhaps the significant relation between ethnicity and sexual orientation (Table 2) influenced the recommendation of the clinician, but on this point, further research is required, including a more detailed qualitative analysis.

Our study represents the first systematic analysis of a North American cohort of adolescents with GID who were considered for hormonal blocker

treatment. Given the relative novelty of this treatment (Hembree et al., 2009), it will be important to follow closely the developmental course of our patients in order to examine the long-term effectiveness of it in contributing to the clinical aim of reducing gender dysphoria and improving general psychosocial well-being. It is equally important to track the developmental course of those patients who were not recommended this form of intervention to see whether or not their gender dysphoria persisted or desisted and to evaluate their general psychologic adaptation and functioning.

NOTES

1. Two of the patients had a co-occurring disorder of sex development: one patient was a genetic female with congenital adrenal hyperplasia, who had been assigned female shortly after birth; the second patient was a genetic male with penile agenesis, who had also been assigned female shortly after birth (and surgically castrated). Both of these patients are included in our sample as females based on their assigned gender. Two other female patients had co-occurring polycystic ovarian syndrome.

2. For sexual orientation, we arbitrarily selected the EROS measure as the metric of sexual orientation, not the SHQ. These two variables were highly correlated, with a Phi coefficient of .61 (Nunnally, 1978, pp. 132–133).

3. A logistic regression that only included the participants with no missing data on any of the variables (N = 88) yielded very similar findings as the multiple imputation procedure. The results of this logistic regression analysis are available from the corresponding author upon request.

4. There is considerable clinical evidence that some women with a lesbian sexual orientation can "migrate" to a transgendered gender identity and vice-versa. For lesbian women, this is particularly common among those who self-identify as "butch." One can also make the same clinical observation for men with a gay sexual orientation, particularly those who are behaviorally very feminine. Thus, it is important consider that an adolescent might fluctuate between these two kinds of identity statuses and thus is an appropriate topic for exploration in supportive psychotherapy (see, e.g., Brown, 2010; Devor, 1997; Diamond & Butterworth, 2008; Lee, 2001; McCarthy, 2003; Rosario, 2009).

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