Monozygotic twins with concordant female-to-male gender dysphoria with different temperament characteristics: a case report

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Gender Dysphoria (GD) is defined as a marked incongruence between one's experienced/expressed gender and assigned gender that the individual feels a strong desire for having the sex characteristics of the other gender. Twin studies could be helpful in making decisive conclusion on the relative role of genetics and environment on GD. Therefore, we hereby present a case of monozygotic twins with concordant female-to-male GD. Seventeen-year-old twins are introduced in this case report. The second pair attended to our clinic for psychiatric evaluation. She was suffering from GD by overwhelmed desire for having masculine features, wearing their cloths, and at the same time revolting being a girl. Although she preferred spending time with male friends, she was sexually attracted to females. Although the first pair had similar characteristics of GD, she presented apposite temperament. While temperament has been considered to be genetically inherited, the incidence of GD in our cases with different temperaments raises the question about genetic role in inheriting temperament and GD. Further twin studies will help understanding the extent of genetic influence on these features.

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Introduction

Gender Dysphoria (GD) is defined as a marked incongruence between one's experienced/expressed gender and assigned gender that result in a strong desire for having the characteristics of the other gender [1]. In the fifth Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the prevalence of male-to-female and female-to-male GD is reported to range between 5 and 14 per 1000 adult males and between 2 and 3 per 1000 adult females, respectively [2]. Review of literature on GD among twins supports the role of genetics in the development of gender identity with a higher GD concordances in Monozygotic (MZ) (37.5%) versus Dizygotic (DZ) (0%) twins; however the prevalence of concordance was found to be less than discordance among MZ (37.5% and 62.5%, respectively) [3]. Considering the limited number of twin samples and genetic studies in GD, evaluating more twins could be helpful in making decisive on the extent of the contribution of genetic factors on GD in relation to environmental factors. In this study we report a pair of MZ female twins that were concordant for GD but surprisingly presented different temperament features.

Case presentation

Sisters M.K. and F.K. are 17-year-old twins. The second pair twin sister (F.K.) was divorced recently and attended to our clinic for psychiatric evaluation. She was deeply uncomfortable with her gender to the point that she was disgusted by her first name and had request for Sex Reassignment Surgery (SRS). Furthermore, she liked to act similar to men, including talking in a masculine manner and wearing men's cloths. She was interested in having male friends; however, she was sexually attracted to females. She declared her desire to have a male gender had nothing to do with the benefits or grants affiliated to male gender in the society and the only reason for sex change was related to her experienced gender which is male identity. She had cross-gender behaviors since her early childhood (at the age of 3). She preferred playing with boys and joining them in boy games, including football. She used to demand for having hair styles of the opposite sex and since the age of nine she had feelings for her female cousin and had sexual relationship with her. She avoided the obligation to sit with girls in the classroom at school. She had a problematic puberty period as her menstrual cycles lasted for sixteen days. Her parental rearing and behavior were never masculine and their

father used to emphasized on an appropriate feminine attitude. He used to say that the girl's behavior should be delicate, and sometimes even mocked them. She then had suicidal idea but she declared that she did not have any plan or act accordingly for the sake of her mother.

She got married at the age of 15. She hated her husband and disliked sexual relationship with him. After her parents knew about the problematic behavior of their daughter, they attended to psychiatrist, when she was diagnosed with GD. Finally, she got divorced after two years of marriage.

She was a born from an unintended pregnancy. Her mother was 15 years old at the time of pregnancy. She was born through caesarian section delivery at around 32 weeks gestation. She has a 4-year-old brother. She mentions that something is always missing in her life. She loves her parents, but not her husband. She had a history of depression and suicidal idea and is currently working as waitress in a restaurant.

In mental state examination, her thought content was not delusional with no other thought disorders, including thought form disorder or perceptional disorders. As a result, schizophrenia and somatic delusion of transsexualism were ruled out. Her intelligence Quotient (IQ) was within normal range.

Her twin sister (M.K.) looked thinner with more feminine compared to F.K. M.K. also had similar desire for sex change but this tendency was more intense and was accompanied with more distress compared to her twin sister. M.K. also disliked to be a girl and had a request for SRS. M.K had similar IQ and education level to F.K. and had no mental problem. Although the twins had concordant desire regarding their gender identity, their temperament features were completely discordant. F.K. was a kind of rigid and introverted person while M.K. was a flexible and sociable one.

Physical examination of uterus, ovaries and external genitals was normal in both the twins. Female secondary sex characteristics were also evident. Skull radiography, adrenal and genitalia sonography were normal and the karyotype of both the twin sisters was "46 XX". Hormonal studies, including testosterone, free testosterone, E2 estradiol, sexual hormone binding globulin, follicular stimulating hormone (FSH), luteinizing hormone (LH), cortisol, 17-hydroxyl progesterone before and after ACTH stimulating test were within normal range. Molecular genetic analysis with 15 microsatellites confirmed that they were monozygotic twins.

Psychological tests with different questionnaires, including Freiburger Personality Inventory, Beck Depression Inventory (BDI), and State-Trait Anxiety Inventory, showed slightly elevated depressive tendency without any other psychiatric disorders.

Discussion

We introduced a monozygotic (MZ) female twin with normal physical, mental, hormonal evaluations, which were concordant for GD. Regardless of the different severity of GD, each pair presented paradoxical temperaments features.

It is speculated that the gender development in accordance with anatomical sex in childhood could be directed by child's temperament and dynamic relationship with parents [4]. However, the etiology of GD encompasses complicated biopsychosocial factors. GD is more prevalent in congenital adrenal hyperplasia or androgen insensitivity syndrome, prenatal exposure to phthalates (found in plastics and polychlorinated biphenyls), maternal toxoplasma infection, and in individuals with psychiatric illnesses or childhood abuse, neglect, maltreatment, and physical or sexual abuse. Common neuroanatomical findings in GD mostly include defects in embryonic development and differentiation in hypothalamic networks and variations in amygdala connectivity and hemispheric ratios according to gender. Higher prevalence of GD in MZ twins compared to dizygotic twins has been considered as an indicator for heritability and familiarity of GD. Association between some alleles, including CYP17 and CYP17 T-34C, and GD has also been reported; however, there is no evidence for causation [5, 6].

Considering the multifactorial etiology of GD, other factors besides genetics may play a role in navigating the gender identity. As a result, GD does not continue into adolescence and adulthood in many children [7]. In this case, we need to follow the twins to check if the GD concordance persists. Then we will be able to better compare their shared temperament characteristics with GD. There is insufficient evidence on the genetic evaluation of GD among twins and thereby the exact contribution of genetics, parental rearing, and environmental factors in the formation of GD is unclear. Some other unanswered questions in this regard include whether the idea of having SRS was shaped as a shared belief between the twins? Or could it be a form of sympathetic reaction by other pair used to cope with the situation? How their concurrent decision for SRS influences the situation? Or whether SRS would be more deteriorating or more acceptable for the parents to get on with? Or whether this concordance facilitate the pain they have for their gender identity?

Conclusion

In this case report we presented twins having concordance GD. This report emphasized the role of genetics in GD inheritance. GD can occur in transsexual twins, but when it comes to temperaments we assumed that this disorder needs to be followed up. On the other hand, MZ twins concordance is still questionable in terms of temperament and GD. Therefore, it is suggested that further follow up studies be conducted on twins in the future to answer these questions.

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REFERENCES

1. Beek TF, Cohen-Kettenis PT, Kreukels BP. Gender incongruence/gender dysphoria and its classification history. *Int Rev Psychiatry.* 2016;28(1):5-12. doi: 10.3109/09540261.2015.1091293. Epub 2015 Nov 19.

2. Silverman JJ, Galanter M, Jackson-Triche M, et al; American Psychiatric Association. The American Psychiatric Association Practice Guidelines for the Psychiatric Evaluation of Adults. *Am J Psychiatry.* 2015 Aug 1;172(8):798-802. doi: 10.1176/appi.ajp.2015.1720501

3. Heylens G, De Cuypere G, Zucker KJ, et al. Gender identity disorder in twins: a review of the case report literature. *J Sex Med.* 2012 Mar;9(3):751-7. doi: 10.1111/j.1743-6109.2011.02567.x. Epub 2011 Dec 6.

4. Martin CL, Ruble DN. Patterns o f gender development. *Annu Rev Psychol.* 2010;61:353-81. doi: 10.1146/annurev.psych.093008.100511

5. Saleem F, Rizvi SW. Transgender Associations and Possible Etiology: A Literature Review. *Cureus*. 2017 Dec 24;9(12):e1984. doi: 10.7759/cureus.1984

6. Garg G, Marwaha R. Gender dysphoria (sexual identity disorders). StatPearls Treasure Island (FL): StatPearls Publishing; 2020.

7. Ristori J, Steensma TD. Gender dysphoria in childhood. *Int Rev Psychiatry.* 2016;28(1):13-20. doi: 10.3109/09540261.2015.1115754. Epub 2016 Jan 12.

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