Gender Identity and Hermaphroditism

In reporting the hermaphroditic pedigree of Salinas, Dominican Republic, Imperato-McGinley *et al.* (*1*) wrote of the ambiguous genitalia of their subjects that, at puberty, "the phallus enlarges to become a functional penis, and the change is so striking that these individuals are referred to by the townspeople as 'guevedoces'—penis at 12 (years of age)." It is anatomically not possible for an ambiguous-looking, clitorine phallus of the type described to become truly a functional penis at puberty without corrective surgery. Moreover, the postsurgical result, although always subnormal in size, is masculinely functional only if the deformed organ was big enough at birth to have the appearance, on casual inspection, not of an enlarged clitoris, but of a boy's penis, despite its hermaphroditic hypospadias.

Evidently the hermaphrodites of Salinas did look more like girls than boys at birth, for early in the pedigree they were believed to be girls. On the basis of three generations of experience, the townspeople coined the term, guevedoces, signifying that they had a folk prognosis, namely, that a baby with ambiguous-looking, hermaphroditic genitalia would grow up to have, at age 12, a masculinizing hormonal puberty. Feminine birth appearance notwithstanding, the townspeople eventually learned to define the indeterminate genital organ not as an enlarged clitoris, but as a hypoplastic penis without a urethra, because they knew that after childhood the body as a whole would look more masculine than feminine. Aware of this prognosis, parents could not confidently assign a newborn hermaphroditic baby as a girl. Even if the birth certificate was assigned female, the parents would know they were rearing a guevedoce who would not look feminine after childhood. Even in the first generation in which hermaphrodites appeared in two families in the family tree (three siblings and one cousin), before they could be defined as guevedoces, parents would rear their child as one of ambiguous sex, not knowing what to expect at puberty.

Imperato-McGinley *et al.* provide no data on the procedures they used to evaluate either the parental-child relationship with respect to ostensible sex of rearing, or the gender identity of the hermaphroditic offspring (three of whom were deceased) when they were grown up. Nonetheless, they wrote:

"Psychosexual orientation (postpubertal) is male, and this is of considerable interest, since the sex of rearing in 18 of the affected males was female. Despite the sex of rearing, the affected were able to change gender identity at the time of puberty. They consider themselves as males and have a libido directed toward the opposite sex. Thus, male sex drive appears to be testosterone related and not dihydrotestosterone related (*15*), and the sex of rearing as female, appears to have a lesser role in the presence of two masculinizing events—testosterone exposure in utero and again at puberty with the development of a male phenotype."

Thus, the authors disregard the postnatal, social stage of gender-identity differentiation as though it does not exist. They offer no supporting behavioral data to match their genetic and endocrine data. One can only assume that they subscribe to a mechanistic, hormonal hypothesis of "male sex drive." Male sex drive, in this sense, is an outmoded concept.

Endocrinology is not synonymous with behavioral endocrinology. Endocrinologists should consult with their behavioral colleagues before entering into unfamiliar territory, including the territory of gender-identity differentiation.

JOHN MONEY
Departments of Psychiatry and Behavioral Sciences and *Pediatrics, Johns Hopkins School of Medicine, Baltimore, Maryland 21205*

References

1. J. Imperato-McGinley, L. Guerrero, T. Gautier, R. E. Peterson, *Science* **186**, 1213 (1974).

2 January 1975; revised 5 August 1975

The disorder that we described (*1*) is a form of male pseudohermaphroditism, characterized by decreased steroid 5α-reductase activity resulting in decreased synthesis of dihydrotestosterone but normal production of testosterone during gestation and at puberty. During a critical period of gestation the decrease in dihydrotestosterone production results in ambiguity of the external genitalia in the male fetus. At puberty, however, virilization occurs, and this is primarily a testosterone mediated event, particularly, the increase in muscle mass and growth of the phallus and scrotum. Thus, these affected subjects, although born with severe ambiguity of the external genitalia, have the anabolic changes of a male puberty, and the clitoral-like phallus grows to 4 to 6 cm in length. The subjects have erections, and the phallus functions sexually as a penis although of course it is not completely normal as the urethra opens on the perineum.

We stated that the sex of rearing in many of the affected males was female, and yet despite this they were able to change to a male gender identity at puberty. All of the affected subjects raised as girls (with three exceptions) are more than 30 years of age. The younger pseudohermaphrodites of the last generation are being raised as boys, and the townspeople therefore now recognize the condition and thus the colloquial expression "guevedoces" or "penis at 12 (years of age)" applies to these individuals.

Money states that "even in the first generation in which hermaphrodites appeared in two families in the family tree (three siblings and one cousin), before they could be defined as guevedoces, parents would rear their child as one of ambiguous sex, not knowing what to expect at puberty." Money obviously does not know how the parents raised these children. Our interviews with some of the affected males and their parents indicate that in the first generation, the affected subjects (eight are alive at present) were raised as girls and there was no ambiguity on the part of the parents as to the sex of the child at birth or in early childhood. They believed they were raising a little girl. This supports the data of Hernandez *et al.* (*2*).

Psychological and anthropological investigations should provide additional data. However, if the initial observations on these subjects continue to be supported by further behavioral evaluation, then it may be that the sex of rearing is not the principal factor in determining gender identity in the male. We do not disregard the postnatal social stage of gender identity. We are saying rather that this form of male pseudohermaphroditism provides a unique clinical model for evaluating the relative importance of the sex of rearing, testosterone imprinting of the brain in utero, and the thrust of a definite male puberty on the determination of gender identity in man.

JULIANNE IMPERATO-MCGINLEY
RALPH E. PETERSON
Department of Medicine, Division of Endocrinology, Cornell University Medical College, New York 10021
TEOFILO GAUTIER
Universidad Nacional Pedro, Henriquez Urena, Department of Pediatrics, Santo Domingo, Dominican Republic

References

1. J. Imperato-McGinley, L. Guerrero, T. Gautier, R. E. Peterson, *Science* **186**, 1213 (1974).
2. L. O. Hernandez, S. Inchaustequi, C. N. Arguello, *J. Dominican Med.* **6** (2), 114 (1951).

30 October 1975; revised 13 January 1976