

Gender, Parenthood, and the Medical Record



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Technological advances and societal trends have changed the ways we should be taking and thinking about our patients' medical histories. This may be most apparent in the ways we consider and use classifications such as "gender," "parenthood," "sibling," and "family." The potential issues are well illustrated in recently published case studies. One describes a 32-year-old transgender individual, classified in the electronic record and by appearance as a man, who presented to an emergency department with intermittent abdominal pain and mild hypertension. He was initially triaged as "stable" and "nonurgent," but on detailed evaluation, a few hours later he was found to be pregnant with possible pre-eclampsia.¹ In this issue of *JACI: In Practice*, Sun et al² present a case series that was initiated when a 17-month-old boy was referred for an immunology consultation due to prolonged fever, rash, and cervical lymphadenitis, from which *Serratia marcescens* was cultured.² Because of the particular organism that was isolated, chronic granulomatous disease was suspected, and was confirmed by dihydrorhodamine testing and identification of a known causative mutation in the cytochrome B gene on the X-chromosome. What is interesting—but not unique—about this case is the fact that the proband was conceived using assisted reproduction technology and a donor egg. Although the donor had negative personal and family histories, subsequent genetic testing confirmed that she carried the mutation. The fertility center was contacted, her gametes were withdrawn from the donor pool, and other recipients of her gametes were contacted for targeted evaluation at the same children's hospital: amongst 5 other children, an additional 6-week-old male child with fungal pneumonia was found to have the same mutation, 2 asymptomatic female children were found to be carriers, and 2 unaffected male children had negative tests. Fortunately, both affected boys responded to the treatment of their infections and hematopoietic stem cell transplantation.

The occurrence of multiple biologic half-siblings across different families is not at all unusual. In this series, 6 babies share the same egg donor. Well-publicized accounts in lay media describe "extended families" with more than 150 individuals conceived with sperm from the same donor.³ Up to date statistics are not available, but it is commonly estimated that 30,000 to 60,000 babies are conceived with donor gametes every year in the

United States, based on data collected in 1987.⁴ A totally voluntary "donor sibling registry" includes more than 65,000 donor conceived-individuals, parents and donors,⁵ and the web site of a prominent sperm bank catalogs more than 500 donors, which may be selected based on physical appearance, personal achievements, and other characteristics.⁶ There are no legal restrictions on how many gametes from individual donors can be distributed, but guidelines promulgated by the American Society for Reproductive Medicine call for no more than 25 births from the same donor per population of 800,000.⁷ As illustrated by this case series, distribution of banked gametes that have been shown to carry disease-causing mutations is likely to be voluntarily stopped or restricted by gamete providers once they have been informed.^{2,8} Some genetic screening of prospective donors is routine, and extended screening for more than 250 known disease-causing mutations may be performed at additional cost.^{6,8} Furthermore, if a prospective parent who is considering obtaining donor gametes is known to carry an autosomal recessive gene, specific DNA testing for that gene in the potential donor may be available.⁸ However, comprehensive screening of donors for all known disease-causing mutations is simply impossible, given the huge number of mutations already known. The 2017 IUIS report on inborn errors of immunity already lists 344 different monogenic immunologic disorders.⁹ Furthermore, the rate at which new disease-causing mutations are being discovered in the era of next-generation sequencing is staggering, with approximately 20 new defects uncovered per year in the immune system alone.⁹ Even for recessive diseases for which screening is routine, such as cystic fibrosis, new, rare alleles may escape detection, and screening for multifactorial or incompletely defined diseases may not even be possible.⁸

Reproductive choices and practices are highly personal and private, donors may choose to remain anonymous, and parents often prefer not to inform children of their biologic parentage. There are no requirements for designation on birth certificates if babies have been conceived using donor gametes, and even reporting of live births to gamete providers (ie, sperm or egg banks) or donors is only voluntary. However, some parents do choose to inform children that they have been adopted or conceived from gamete or embryo transfer, and more and more individuals are identifying unknown biological half-siblings (and shared gamete donors) by direct-to-consumer DNA testing services and social media.

This brings us back to the issue of the medical history. It is no longer sufficient to state that "the family history is negative" based on questions like "Has anyone in the family had unusual or severe infections?" If the biological family history is unknown or the parents raising the child prefer to keep it confidential, we should note that. We should provide a way for biologic parentage to be recorded in the medical record, to be available in case of medical necessity, while providing for confidentiality even from the child, if that is the parents' wish. Similarly, we must be able to denote

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No funding was received for this work.

Conflicts of interest: M. Berger is a salaried employee of CSL Behring and owner of stock. The opinions expressed herein are solely those of the author and not positions or policies of CSL Behring or CSL, Ltd.

Received for publication August 20, 2019; accepted for publication August 20, 2019.

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J Allergy Clin Immunol Pract 2020;8:750-1.

2213-2198

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<https://doi.org/10.1016/j.jaip.2019.08.021>

patients' biological gender even if that is distinct from their self-identification.¹ In order to facilitate completeness and honesty in medical records, we must use sensitivity and respect in taking the history, and encourage confidence that patients' and parents' privacy and confidentiality will be protected while assuring that essential medical information will be available when needed.

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