

Cystic Fibrosis and Congenital Absence of the Vas Deferens

It is well known that most, if not all, male children born with cystic fibrosis (CF) also have bilateral congenital absence of the vas deferens (CAVD). In most studies, the converse has not been observed, as males referred for CAVD have not generally been tested for CF in the past. Because it is now possible to test directly for common mutation of the CF gene, Rigot et al¹ have recently analyzed a group of men with CAVD for carrier status for the ΔF_{508} mutation of the CF gene. They found that 8 of 19 CAVD patients were heterozygous for this deletion. This frequency of ΔF_{508} carriers is much higher than the expected carrier rate for the general population, which is 1 in 25. In addition, all but 1 of the 8 carriers had chronic sinusitis, and 2 patients had abnormal sweat chloride tests.

The results of Rigot et al have been confirmed by Anguiano et al,² who found that 12 of 20 patients with CAVD carried confirmed mutations in the CF gene. These patients all had normal sweat chloride tests and no other signs of CF. It must be that the ΔF_{508} mutation is contributing to the CAVD in some way. Perhaps there is still another allele at the CF gene locus that does not cause CF but does lead to CAVD, and the patients in the study by Rigot et al who showed signs of CF represent compound heterozygotes.

In such a population, the risk of having a child with CF would be between 1 in 100 and 1 in 200. In the past, no one with CAVD has been able to father a child, but Silber et al³ have achieved successful in vitro fertilization with epididymal sperm from patients with CAVD. Thus, as Rigot et al emphasize, their data on the frequency of CF carriers in CAVD males suggest that testing for the CF ΔF_{508} allele should be performed in these men and their partners whenever in vitro fertilization is planned. In addition, the Silber et al³ plan a detailed study of the offspring of the CAVD patients. The condition does seem to have a genetic basis—many affected siblings have been observed as well as concordant monozygous twins. If a

substantial number of the male children of these patients have unilateral CAVD, it would imply that the condition is due not to a sex-linked recessive transfer from mother to son, but possibly to an autosomal dominant gene.

References

1. Rigot JM, et al. *N Engl J Med* 1991;325:64.
2. Anguiano A, et al. *Proc Intl Congr Hum Genet* 1991; 49(suppl):22.
3. Silber SJ, et al. *N Engl J Med* 1990;323:1788.

Editor's comment: *The concurrent development of in vitro fertilization technology and the ability to identify carriers of CF mutations will have, in this case, a twofold benefit. Now that CAVD patients are able to conceive, the CF analysis will allow counseling regarding their high risk for transmitting a CF gene to their children. The mapping of the CF locus, which appears to be linked or identical to CAVD, combined with inheritance studies of CAVD, will hopefully help to identify the mutation responsible for CAVD.*

Judith G. Hall, MD

Erratum:

In GGH Vol. 8, No. 1 (March 1992), an error on page 14 incorrectly references Dr. Yarasheski, et al's abstract entitled "Effect of Growth Hormone and Resistance Exercise on Muscle Growth in Young Men." The correct reference is: Yarasheski KE, Campbell JA, Smith K, et al. *Am J Physiol* 1992;262:E261-E267.