

## Serum AMH concentration as a marker evaluating gonadal function in boys operated on for unilateral cryptorchidism between 1st and 4th year of life—why patients with inguinal hernia served as controls

Ewa Matuszczak · Adam Hermanowicz ·  
Wojciech Debek

Published online: 14 January 2012

© The Author(s) 2012. This article is published with open access at Springerlink.com

In our study “Serum AMH concentration as a marker evaluating gonadal function in boys operated on for unilateral cryptorchidism between 1st and 4th year of life” [1], we measured serum AMH (anti-Mullerian hormone) levels in boys with cryptorchidism and boys with inguinal hernia. AMH is secreted by immature Sertoli cells during the 8th week of gestation, and is responsible for the regression of Mullerian ducts in the male fetus as part of the sexual differentiation process. With the onset of puberty and spermatogenesis in healthy men, the secretion of AMH declines in correlation to the maturation of Sertoli cells. Only Sertoli cells remain active during childhood, so the evaluation of gonadal function in the prepubertal male relies on the assessment of Sertoli cell products [2].

The descent of testis from a temporary intra-abdominal site in fetal life to the permanent scrotal location after birth is crucial to spermatogenesis in mature testis. Most authors agree to the fact, that the temperature in the abdomen and the inguinal canal, higher than the temperature in the scrotum, is detrimental to the testicular development and function. In some patients oblique inguinal hernia causes the pulling-up of the testicle, thus sometimes being the cause of cryptorchidism. All our patients with oblique inguinal hernia, serving as controls in the study, had their testes in the scrotum. The major lengths of the undescended testes were smaller in comparison to the testes positioned normally (mean of 1 cm vs. mean of 1.5 cm,

respectively). Moreover, in nine of the cases of cryptorchidism, the testes had turgor deficit, a drop shape, with epididymides that were small, dysplastic, and separated from the testis. The difference between the testes of two sides in boys with inguinal hernia, with the testicle on involved side larger than the healthy side, is caused by the transient troubled venous circulation, which indeed may influence testicular function. The most important measure of gonadal function is fertility. In the study “Impact of childhood inguinal hernia repair in adulthood: 50 years of follow-up”, Zendejas et al. [3] found that medical diagnosis of infertility was reported in 5% men who underwent a primary inguinal hernia repair as a child, versus 30% of men operated on in childhood for unilateral cryptorchidism, who are subfertile in later life [4]. In our study, we wanted to evaluate gonadal function in boys operated on for unilateral cryptorchidism. Patients with inguinal hernia served as controls, because multiple studies [3, 4] showed, that inguinal hernia does not affect the testicular function and men fertility.

We found that AMH was lower in boys with unilateral cryptorchidism, than in boys with inguinal hernia, which indicates that testicular function is definitively more impaired in boys with cryptorchidism in comparison with boys with inguinal hernia. Of course it is interesting, if there is a difference between serum AMH concentration in healthy boys and boys with inguinal hernia. We are going to carry on with the studies on AMH concentration in healthy boys, and boys with inguinal hernia and cryptorchidism.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

E. Matuszczak (✉) · A. Hermanowicz · W. Debek  
Medical University of Białystok, Białystok, Poland  
e-mail: ewamat@tlen.pl

## References

1. E. Matuszczak, A. Hermanowicz, W. Debek et al., Serum AMH concentration as a marker evaluating gonadal function in boys operated on for unilateral cryptorchidism between 1st and 4th year of life. *Endocrine* (2011) (epub ahead of print)
2. M.M. Lee, M. Misra, P.K. Donahoe, D.T. MacLaughlin, MIS/AMH in the assessment of cryptorchidism and intersex conditions. *Mol. Cell. Endocrinol.* **211**, 91–98 (2003)
3. B. Zendejas, A.E. Zarroug, Y.M. Erben et al., Impact of childhood inguinal hernia repair in adulthood: 50 years of follow-up. *J. Am. Coll. Surg.* **211**, 762–768 (2010)
4. D.S. Engeler, P.O. Hosli, H. John, Early orchiopexy: prepubertal intratubular germ cell neoplasia and fertility outcome. *Urology* **56**, 144–148 (2000)