CLIA

Anti-Müllerian Hormone

An important fertility biomarker for women and in the diagnosis of disorders of sex development

HUMAN
Diagnostics Worldwide

Anti-Müllerian Hormone (AMH)

An important fertility biomarker for women and in the diagnosis of disorders of sex development

What is AMH?

AMH is a hormone with two main functions in the human body. It has different effects in humans depending on gender and age.

a) Parameter of oocyte functional reserve in women

The hormone AMH is produced by cells from the small follicles in a woman's ovaries and is used as a marker of oocyte quantity.

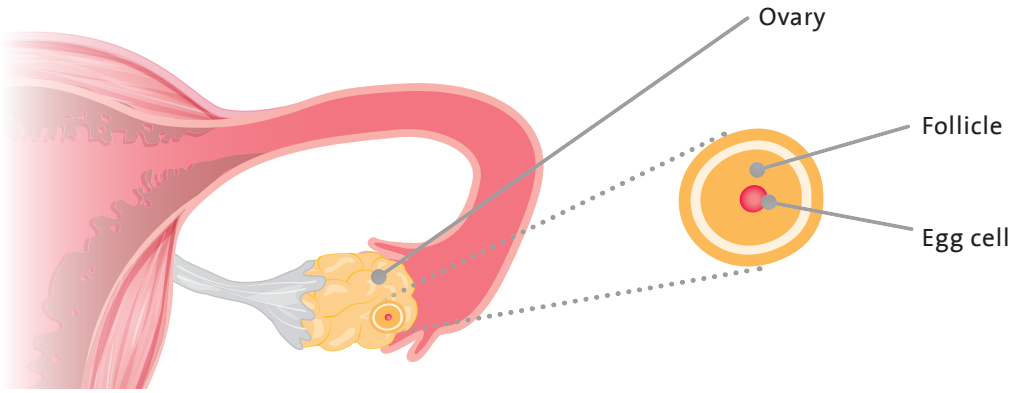


Fig.1: The follicles contain the egg cells and produce AMH, that has a role in egg maturation and release

b) Sexual differentiation in the embryo

In the male embryo the developing testes produce AMH causing regression of the Müllerian ducts, and thus AMH plays a major role in the development of internal male genitalia. On the other hand, the female embryo does not produce AMH. As a result of the absence of AMH, the Müllerian ducts develop into female internal sex organs.

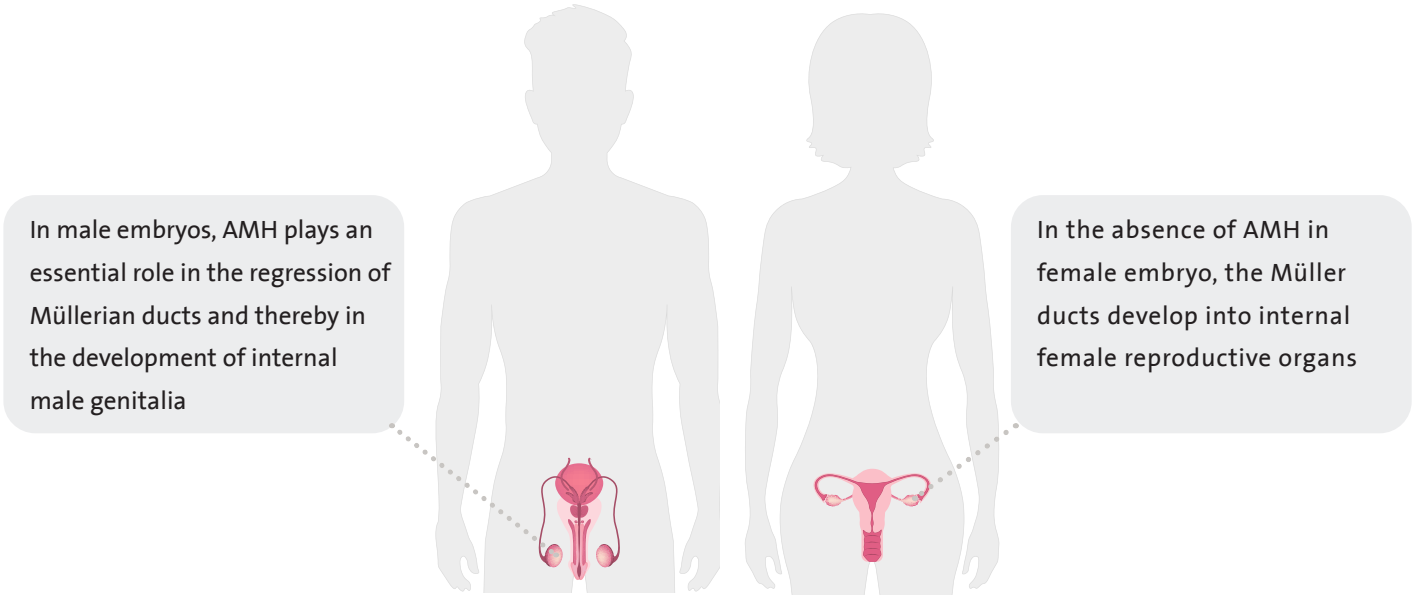


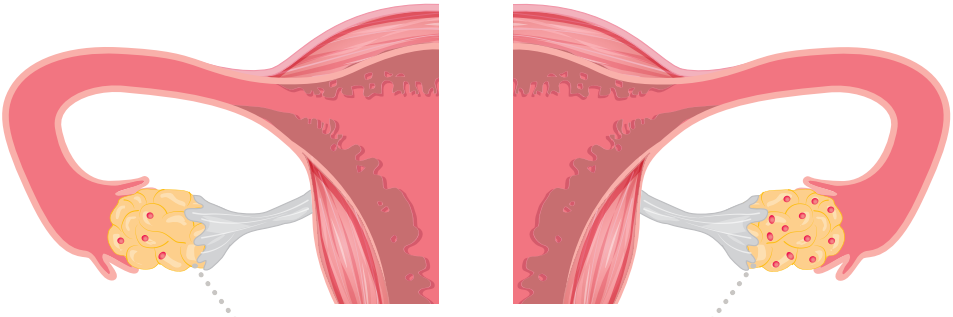
Fig. 2: Sexual differentiation depending on AMH (adapted from Silva M.S.B.)[1]

Why testing for AMH?

The hormone AMH is an ideal fertility biomarker in women and may also be used in the diagnosis of disorders of sex development (DSD) in children.

Assessment of the ovarian function and menopausal status

The AMH level in the blood indicates the number of eggs in the ovaries. The higher the AMH concentration, the greater the number of eggs. This makes AMH an ideal biomarker that may be used by fertility doctors to assess a woman's ovarian reserve or egg count.



Low ovarian reserve
Lower level of AMH concentration

High ovarian reserve
Higher level of AMH concentration

Fig. 3: AMH is produced by the follicles and represents the remaining oocyte reserve in the ovaries.

In addition, serum levels of AMH may be a novel marker, supporting doctors in the proper assessment of ovarian aging at an early stage. It seems crucial for counseling patients about their chances for pregnancy, either spontaneously or during fertility therapy.[2] Throughout life, the stock of primordial follicles in the ovaries decreases steadily until it is depleted around menopause.[3] Higher AMH values usually signify that a woman has a normal ovarian reserve and lower numbers may indicate a woman with a low or diminished ovarian reserve (DOR).

AMH versus FSH

Another way to measure ovarian reserve is the determination of day-3 follicle-stimulating hormone (FSH).
However, the basal FSH level is influenced by the menstrual cycle, whereas the levels of AMH are fairly constant throughout this cycle.[4] Therefore, unlike FSH, AMH testing can be done on any day of the woman's cycle. Furthermore, AMH levels decline with age and become undetectable at least 5 years before menopause. The rise in FSH levels usually occurs later and therefore AMH appears to be a more sensitive indicator of ovarian reserve.[5]

Assistance in the diagnosis of disorders of sex development in children

Disorders of sex development (DSD) are generally rare conditions. However, laboratory investigations play a key role in the diagnostic workflow in individuals with suspected DSD.[6] Establishing the right diagnosis is essential to counsel on prognosis, appropriate therapy, and necessary screening for associated comorbidities, and, especially in neonates, on the sex of rearing. The consensus statement for clinicians suggests AMH, among other parameters, as part of the set of essential diagnosis in the initial investigations when DSD is suspected.[7]

Anti-Müllerian Hormone

An important fertility biomarker for women and in DSD diagnosis

Main indications of AMH HumaCLIA SR

- Aid in the diagnosis of (in-)fertility
- For evaluation of the ovarian function
- For evaluation of the menopausal status
- Assistance in the diagnosis of disorders of sex development in children

Product and order information

HumaCLIA 150	REF 15910
Random-access chemiluminescence immunoassay system	

AMH HumaCLIA SR	REF 82150
Content	2 x 50 tests incl. calibrators
Measurement range (displayed)	0.03 - 25 ng/ml
Analytical measuring interval	0.11 - 25 ng/ml
Sample volume	58 µl
AMH HumaCLIA SR Control	REF 82850
Content	2 levels each with 2 x 2 ml

References

1. Mauro S. B. Silva & Paolo Giacobini. New insights into anti-Müllerian hormone role in the hypothalamic–pituitary–gonadal axis and neuroendocrine development. Cellular and Molecular Life Sciences volume 78, pages1–16(2021)
2. de Vet A, Laven JS, de Jong FH, Themmen AP, Fauser BC. Antimüllerian hormone serum levels: a putative marker for ovarian aging. Fertil Steril. 2002 Feb;77(2):357-62. doi: 10.1016/s0015-0282(01)02993-4. PMID: 11821097.
3. Baker TG. A quantitative and cytological study of germ cells in humanovaries. Proc Roy Soc Lond (Biol) 1963;158:417–33.
4. Zheng, Haiyan & Chen, Shiping & Du, Hongzi & Ling, Jiawei & Wu, Yixuan & Liu, Haiying & Liu, Jianqiao. (2017). Ovarian response prediction in controlled ovarian stimulation for IVF using anti-Müllerian hormone in Chinese women: A retrospective cohort study. Medicine. 96. e6495. 10.1097/MD.0000000000006495.
5. https://www.albrechtwomenscare.com/blog/2018/08/01/evaluation-of-ovarian-function-a-192285]
6. Hughes IA, Houk C, Ahmed SF, Lee PA, Group LC, Group EC: Consensus statement on management of intersex disorders. Arch Dis Child 91: 554–563 (2006).
7. Hannema S, E, de Rijke Y, B: Improving Laboratory Assessment in Disorders of Sex Development through a Multidisciplinary Network. Sex Dev 2018;12:135-139. doi: 10.1159/000486329
8. La Marca, Antonio & Broekmans, F.J.M. & Volpe, A & Fauser, Bart & Macklon, Nick. (2009). Anti-Müllerian hormone (AMH): What do we still need to know? Human reproduction (Oxford, England). 24. 2264-75. 10.1093/humrep/dep210.

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