

## Embryogenesis of vagina and embryopathogenesis of Herlyn-Werner-Wunderlich syndrome

Sir,

I read with great interest the article titled, "Herlyn-Werner-Wunderlich syndrome presenting with infertility: Role of MRI in diagnosis" by Ahmad *et al.* published in the Indian Journal of Radiology and Imaging.<sup>[1]</sup> The manuscript is excellent and informative. However, I would like to make the following contribution.

Herlyn-Werner-Wunderlich syndrome comprises of uterus didelphys, obstructed hemivagina and ipsilateral renal agenesis/anomaly. Hence, the acronym OHVIRA syndrome.<sup>[1]</sup> The embryopathogenesis of OHVIRA syndrome is debatable. While the classical theory puts forth Mullerian (paramesonephric) roots of upper vagina, Acien's hypothesis postulates mesonephric (Wolfian) origin

of vagina in entirety except its lining epithelium from the Mullerian tubercle.<sup>[2-4]</sup>

Common to both, the traditional and Acien's view is formation of the kidney and the uterus with cervix. The former develops as a result of inductive effect of metanephric blastema (derived from the Wolfian duct at 5 weeks of gestation) into metanephros; for the latter, the mesonephros allows for proper positioning and subsequent caudal fusion of paramesonephric ducts.<sup>[4]</sup> Wolfian birth of vagina, put forth by Acien (and supported by experiments of Sanchez on female rats),<sup>[3,4]</sup> explains OHVIRA as a faulty development of mesonephros that results in three-fold effects; (a) failure of formation of metanephric blastema from the Wolfian duct and hence subsequent renal agenesis/anomaly, (b) absence

of supportive function and possibly growth factors from mesonephros halts the fusion of paramesonephric ducts (uterus didelphys), and (c) a blind hemivagina (postulated to be a derivative of mesonephros) on the same side.<sup>[2-4]</sup> Thus, this fully explains the cascade of events.

To conclude, I once again commend the authors for an excellent article. However, in light of new research, a fresh perspective towards the embryogenesis of vagina needs to be adopted.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**Yashant Aswani**

Department of Radiology, Seth GSMC and KEM Hospital,  
Mumbai, India  
E-mail: yashant\_aswani@rediffmail.com

**References**

1. Ahmad Z, Goyal A, Das CJ, Deka D, Sharma R. Herlyn–Werner–Wunderlich syndrome presenting with infertility: Role of MRI in diagnosis. *Indian J Radiol Imaging* 2013;23:243-6.
2. Ación P. Embryological observations on the female genital tract. *Hum Reprod* 1992;7:437-45.
3. Sánchez-Ferrer ML, Ación MI, Sánchez del Campo F, Mayol-Belda MJ, Ación P. Experimental contributions to the study of the embryology of the vagina. *Hum Reprod* 2006;21:1623-8.
4. Bajaj SK, Misra R, Thukral BB, Gupta R. OHVIRA: Uterus didelphys, blind hemivagina and ipsilateral renal agenesis: Advantage MRI. *J Hum Reprod Sci* 2012;5:67-70.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online	
<b>Quick Response Code:</b>	<b>Website:</b> www.ijri.org
	<b>DOI:</b> 10.4103/0971-3026.190411

**Cite this article as:** Aswani Y. Embryogenesis of vagina and embryopathogenesis of Herlyn–Werner–Wunderlich syndrome. *Indian J Radiol Imaging* 2016;26:417-8.