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A review of the thermal effects during pregnancy by using ultrasound: Doppler mode (Review)

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Abstract

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Doppler ultrasound is used in obstetrics and gynecology fields to serve as the complement mode in the standard prenatal scan. It aids in investigating fetus blood flow in expectant mothers' wombs, usually those who come with pregnancy complications. In the conventional ultrasound beam, the heat produced by attenuation is distributed over the area. However, the Doppler ultrasound beam is focused at only one point. This leads the heat to accumulate at that particular area and hence there is an increase in the temperature. Heat is considered as a teratogen in pregnancy, whereby an increase in the fetal temperature can be fatal to the fetus. Studies have found that Doppler mode is associated with higher acoustic output as compared to the conventional two-dimensional (2D) ultrasound mode. Several studies done on animals have ruled out the evidence of Doppler ultrasound bioeffects. This narrative review only discusses the thermally induced effect of ultrasound by using Doppler mode. This study reviews prior studies with keywords such as Doppler ultrasound, bioeffects, heating effects, rabbit, and pregnancy. Earlier studies noted that the risk of thermal effects increased with the increase of exposure time. However, Doppler ultrasound wave inducing fetal hyperthermia is not the main reason for causing adverse neonatal outcomes without taking into account other external factors. Therefore, it is essential for the practitioners to adopt and adapt the concept of 'as low as reasonably achievable' (ALARA) to avoid any subtle adverse effects. © Universiti Putra Malaysia Press.

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- 1 Abramowicz, J.S.
Fetal Doppler: How to keep it safe?

(2010) *Clinical Obstetrics and Gynecology*, 53 (4), pp. 842-850. Cited 14 times.
doi: 10.1097/GRF.0b013e3181fbae34

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-
- 2 Abramowicz, J.S.
Ultrasound in Assisted Reproductive Technologies and the First Trimester: Is There a Risk?

(2017) *Clinical Obstetrics and Gynecology*, 60 (1), pp. 121-132. Cited 3 times.
www.lww.com/store/products?0009-9201
doi: 10.1097/GRF.0000000000000256

View at Publisher
-
- 3 Alfirevic, Z., Stampalija, T., Dowswell, T.
Fetal and umbilical Doppler ultrasound in high-risk pregnancies (Open Access)

(2017) *Cochrane Database of Systematic Reviews*, 2017 (6), art. no. CD007529. Cited 32 times.
<http://as.wiley.com.ezproxy.um.edu.my/WileyCDA/Brand/id-6.html>
doi: 10.1002/14651858.CD007529.pub4

View at Publisher
-
- 4 Alfirevic, Z., Stampalija, T., Medley, N.
Fetal and umbilical Doppler ultrasound in normal pregnancy

(2015) *Cochrane Database of Systematic Reviews*, 2015 (4), art. no. CD001450. Cited 23 times.
<http://as.wiley.com.ezproxy.um.edu.my/WileyCDA/Brand/id-6.html>
doi: 10.1002/14651858.CD001450.pub4

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-
- 5 (2014) *As Low As Reasonably Achievable (ALARA) Principle*. Cited 2 times.
Retrieved January 13, 2018, from
<http://www.aium.org/officialStatements/39>
-
- 6 Parents ignoring FDA warning against prenatal portraits
(2004) *USA Today*
March 27, Retrieved January 13, 2018, from
http://usatoday30.usatoday.com/news/health/2004-03-27-prenatal-portraits_x.htm
-
- 7 Ball, J., Price, T.
(1995) *Chesney's Radiographic Imaging*. Cited 19 times.
(6th Ed.). Massachusetts: Wiley-Blackwell
-
- 8 Barnett, S.B., Maulik, D.
Guidelines and recommendations for safe use of Doppler ultrasound in perinatal applications

(2001) *Journal of Maternal-Fetal Medicine*, 10 (2), pp. 75-84. Cited 57 times.

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-