



Effect of transvaginal ultrasound on human chorionic villus cell apoptosis during pregnancy

X.L. Qu^{1,2}, H.T. Wang^{1,2}, J.L. Zou², L. Cheng¹, F. Wang², L.L. Ma² and J. Li¹

¹Department of Ultrasonography, Qilu Hospital of Shandong University, Jinan, Shandong, China

²Department of Ultrasonography, Shandong Weihai Municipal Hospital, Weihai, Shandong, China

Corresponding author: J. Li

E-mail: mondaywillbehai@163.com

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ABSTRACT. With the advancement of ultrasonic technology in recent years, sonography has become a common medical diagnostic tool, as it has elevated output sonic intensity and elongated exposure time. This study investigates the effect of ultrasound on human chorionic villus cell apoptosis during early pregnancy. Transvaginal ultrasound was performed for a total of 60 women who had undergone induced abortion at our hospital. They were randomly divided into the control, short ultrasound (10 min), and long ultrasound (20 min) groups (N = 20 each). Twenty-four hours after ultrasonic exposure, chorionic villus tissues were extracted during induced abortion, and were tested for cell apoptosis using flow cytometry. Bax and B cell lymphoma-2 (Bcl-2) protein levels were also quantified by immunohistochemistry. We found that the long ultrasound group had significantly higher cell apoptosis rates compared to the short ultrasound group, which in turn had higher rates compared to the control group ($P < 0.05$ in both cases). Bax protein levels were elevated in both the long and

short ultrasound groups ($P < 0.05$). Bcl-2 proteins in two ultrasound groups, however, were downregulated as compared to those in the control group ($P < 0.05$). It is therefore possible that transvaginal sonography can potentiate the apoptosis of human chorionic villus cells by increasing the Bax/Bcl-2 protein ratio.

Key words: Transvaginal ultrasound; Human chorionic villus cells; Cell apoptosis; Bax/Bcl-2