

























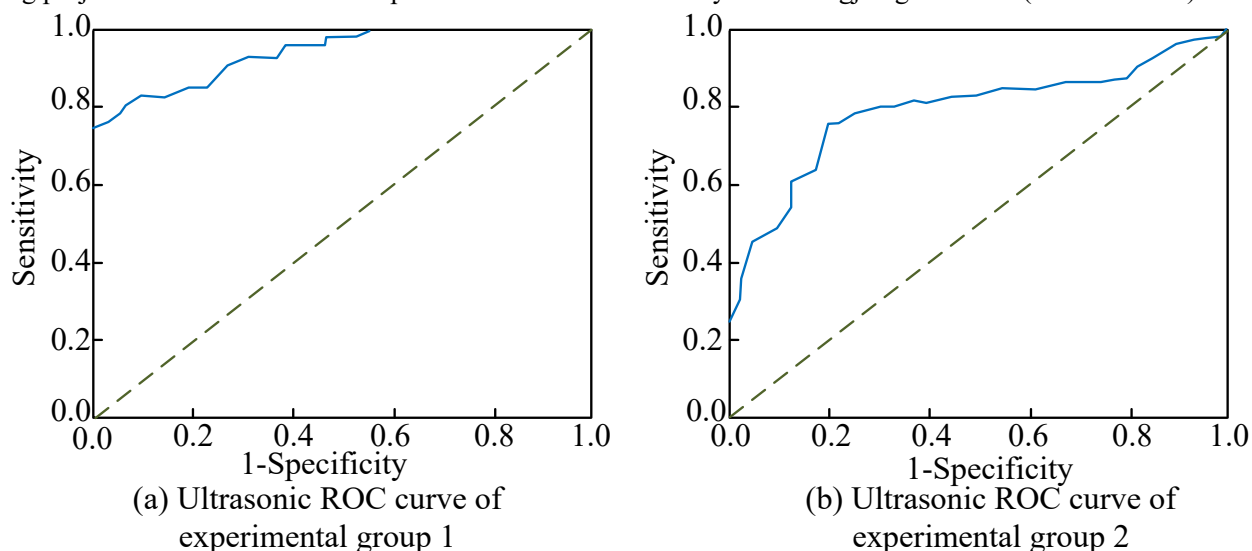
cervical cancer through gynecological examination and two-dimensional measurement with good application effect. The research enables medical graduates majoring in ultrasound to use vaginal color Doppler ultrasound and three-dimensional energy Doppler ultrasound to diagnose and analyze the condition of cervical cancer patients, so as to provide reference for the follow-up treatment intervention.

**Methods:** By selecting 60 patients with cervical cancer and 30 women who were clinically diagnosed as healthy in a hospital, the patients with cervical cancer were randomly divided into experimental group 1 and experimental group 2, and the healthy patients were the control group. In experimental group 1, the GE730 (GEVoluson730Expert) three-dimensional Doppler ultrasound diagnostic instrument was used for vaginal ultrasound examination. The preset values of the diagnostic instrument were: pulse repetition rate 0.9 kHz, volume angle 90 degrees, wall filter Low 1, pulse transmission frequency mid, and line density 8. The three-dimensional presetting was carried out with high quality and sampling angle 90 degrees. Experiment group 2 uses the same ultrasonic instrument for diagnosis. What is different from experiment group 1 is that experiment group 2 carries out two-dimensional presetting, specifically, gray scale 0, medium frequency, medium quality, dynamic range 7, residual gray 2, edge enhancement 2, and suppression 15. During the experiment, the blood flow index, angiogenesis index, angiogenesis blood flow index, tumor size and other indicators of the patients were examined. In the course of the experiment, the difference analysis of the experimental data was carried out with the help of statistical difference analysis to compare variables through *t* test or Fisher exact test, and compare the differences between groups under the two test methods.

**Results:** The peak systolic flow rate and end diastolic flow rate in the transvaginal color Doppler ultrasound group were higher than those in the experimental group 1 and the control group, and the resistance index was lower than those in the other two groups, with significant statistical significance ( $p < 0.05$ ). In the experimental group 1 using three-dimensional ultrasound, it was found that the tumor size was linearly negatively correlated with the resistance index, and its angiogenesis index the blood flow index and angiogenesis blood flow index were higher than those in the control group ( $p < 0.05$ ). The area of Receiver Operator Characteristic (ROC) curve of blood flow index value in experimental group 1 and the diagnostic effectiveness of cervical cancer in experimental group 2 were greater than those in experimental group 2 (area under ROC curve  $0.906 > 0.789$ , sensitivity  $75.1\% > 72.6\%$ , specificity  $100.0\% > 75.0\%$ ). Three-dimensional ultrasound diagnosis has a good application effect. Fig. 1 shows the ultrasonic ROC curve results of experimental group 1 and experimental group 2.

**Conclusion:** The diagnosis and treatment of early cervical cancer by vaginal three-dimensional Doppler ultrasound can effectively provide a new method for blood flow detection, and its diagnostic effect is significantly higher than that of two-dimensional ultrasound, with high specificity and sensitivity. Therefore, in the future diagnosis and intervention of cervical cancer, we should actively play the advantages of three-dimensional ultrasound imaging detection, and we can also consider joint detection to improve the accuracy of diagnosis.

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**Fig. 1. Results of ultrasonic ROC (Receiver Operator Characteristic) curve of experimental group 1 and experimental group 2.**