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Discussion on the Clinical Follow-up Management of Fetal Soft Index Abnormalities by Ultrasound in District-level Maternal and Child Institutions

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Abstract: Objective: To explore the implementation effect and application value of clinical follow-up management of fetal soft index abnormalities detected by pregnancy ultrasound in district-level maternal and child health care institutions. Methods: 200 pregnant women who received fetal ultrasound examinations received by our center from January 2025 to December 2025 were selected as the research subjects, and standardized clinical follow-up management was implemented uniformly to collect statistics on the abnormal detection of various fetal ultrasound soft indicators, and to observe the outcome of abnormal indicators, follow-up completion and pregnancy outcomes. Results: A total of 67 fetal soft index abnormalities were detected among 200 second-trimester ultrasound examinations of pregnant women, with ventricular bright spots and renal pelvis separation accounting for the highest proportions. After systematic follow-up management, the follow-up completion rate of abnormal cases was 95.52%, the overall normalization rate of abnormal indicators was 89.55%, and the overall incidence of adverse pregnancy outcomes was low. Conclusion: District-level maternal and child institutions implement standardized special follow-up management for abnormal fetal ultrasound soft indicators, which can effectively improve the quality of follow-up completion, promote the regression and recovery of abnormal fetal soft indicators, reduce the probability of adverse pregnancy outcomes, and have important application significance for grassroots prenatal care work.

Keywords: District-level maternal and child institutions; Fetal ultrasound; Soft index abnormalities; Follow-up management; Prenatal secondary screening

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1. Introduction

Fetal ultrasound soft index abnormalities are a common minor abnormality in prenatal systematic ultrasound examination. This type of abnormality is not an organic structural malformation of the fetus and has no

clear pathological damage characteristics [1]. However, persistent abnormalities of soft indexes or multiple combined abnormalities will increase the potential risk of fetal chromosomal abnormalities and intrauterine development abnormalities to a certain extent [2]. District-level maternal and child health care institutions are the core grassroots units for prenatal secondary ultrasound screening in their jurisdictions. They are responsible for routine prenatal secondary ultrasound screening and pregnancy health care for the vast majority of pregnant women in their jurisdictions. The screening covers a wide range of people and has a large case base. It is a key link in the early screening and early management of abnormal fetal soft indicators. At present, prenatal follow-up work in grassroots maternal and child institutions mostly relies on routine prenatal check-up procedures. There is no dedicated follow-up system for abnormal fetal soft indicators. There are various problems such as random follow-up procedures, insufficient tracking, lack of health guidance, and incomplete outcome records. Some cases of minor soft indicator abnormalities cannot be continuously monitored dynamically, which will prevent potential pregnancy risks from being identified in time, which is not conducive to the safe management and control of mothers and babies [3]. Most fetal soft index abnormalities are reversible. Standardized and continuous clinical follow-up management can dynamically monitor changes in fetal development and carry out timely targeted intervention during pregnancy, which can maximize fetal prognosis. In order to improve the clinical management and control system of fetal soft index abnormalities at the grassroots level and improve the follow-up service quality of prenatal secondary ultrasound screening, this study selected 200 pregnant women who underwent fetal secondary ultrasound examination in 2025 in our center to conduct a study, uniformly implemented a standardized follow-up management model, and statistically analyzed the distribution characteristics of soft index abnormalities and the clinical application effect of follow-up management. The purpose of this study is to explore a follow-up management plan for fetal soft index abnormalities suitable for district-level grassroots maternal and child institutions.

2. Materials and methods

2.1. General information

200 pregnant women who received secondary fetal ultrasound screening in our center from January 2025 to December 2025 were selected as the research subjects. The maternal age was 21 to 39 years old, with an average of (29.64 ± 3.21) years, and the gestational age was 17 to 24 weeks, with an average of (21.27 ± 1.28) weeks. All research subjects were singleton pregnancies.

2.1.1. Inclusion criteria

(1) All have completed second-trimester systematic fetal ultrasound screening in our center;
(2) Clinical prenatal examination data and screening data are complete;
(3) Ability to cooperate in completing full pregnancy follow-up and re-examination.

2.1.2. Exclusion criteria

(1) Combined with serious pregnancy complications such as severe gestational hypertension and gestational diabetes;
(2) There are clear familial hereditary fetal malformations and chromosomal diseases;
(3) Those who were transferred to another hospital midway through pregnancy, actively terminated

pregnancy, or lost contact for follow-up.

2.2. Method

All 200 research subjects received routine fetal secondary ultrasound screening. The screening equipment uniformly used color Doppler ultrasound diagnostic equipment. Qualified full-time ultrasonic doctors in our center completed the screening operations. Fetal multi-section scans were carried out in strict accordance with the grassroots prenatal secondary ultrasound screening standards, focusing on observing the fetal brain, heart, abdomen, limbs and other structures, and accurately screening for various ultrasound soft index abnormalities.

Follow-up management: The first step is to create a special case file. After the ultrasound screening is completed and the fetus is found to have soft indicator abnormalities, an electronic follow-up file will be established for the corresponding pregnant woman. Relevant information such as maternal age, screening gestational age, contact information, abnormal indicator type, severity, and screening imaging results will be entered in detail for classification and archiving to facilitate data retrieval and use for subsequent stratified follow-up work. The second step is stratified dynamic follow-up, which combines relevant clinical guidelines and grass-roots screening standards to classify the risk of soft indicator abnormalities. For low-risk single abnormal cases, a monthly ultrasound review is set to continuously monitor changes in indicators. For medium-risk combined abnormal cases, the review interval is shortened to once every two weeks. Screening items are flexibly adjusted according to changes in gestational age, and fetal development is dynamically tracked until the delivery of the pregnant woman. The third is personalized pregnancy guidance. Based on the different abnormal soft indicators of the fetus and the physical condition of the pregnant woman, a corresponding pregnancy guidance plan is developed. The content covers many aspects such as diet, work and rest adjustment, emotional regulation, moderate exercise, and pregnancy taboos. At the same time, pregnant women can answer various pregnancy questions at any time, relieve their anxiety caused by abnormal fetal indicators, and reduce the adverse effects of adverse pregnancy factors on fetal development. The fourth is active tracking management. Full-time health nurses are responsible for follow-up work and establish a fixed follow-up reminder mechanism. Pregnant women who are about to be re-examined will be reminded in advance through WeChat and phone calls. Pregnant women who have not yet been re-examined will also be proactively communicated and followed up to confirm the actual conditions of the mother and fetus, minimize the loss to follow-up rate, and ensure that follow-up work can be carried out consistently. Finally, there is a summary follow-up of delivery outcomes. The final follow-up is carried out in the third trimester of pregnancy and after delivery, and the fetal soft index outcomes, neonatal development, etc. are recorded in detail.

2.3. Observation indicators

(1) Distribution of fetal soft index abnormalities

Statistics on the detection of soft index abnormalities in 200 secondary ultrasound screening cases.

(2) Completion status of follow-up management

Statistics of follow-up completion rate of abnormal cases, loss-to-follow-up rate and normalization rate of fetal abnormal soft indicators. Follow-up completion is defined as the completion of all review items on schedule and complete data records. Normal outcome is defined as the complete disappearance of abnormal soft indicators after the follow-up.

(3) Pregnancy outcomes

Statistics of adverse pregnancy outcomes in all abnormal cases, including four types of adverse events: premature birth, intrauterine growth retardation, neonatal minor abnormalities, and amniotic fluid abnormalities.

2.4. Statistical methods

Use SPSS22.0 to process data. Count data were expressed as percentages, and overall data were analyzed using descriptive statistics.

3. Results

3.1. Overall distribution of fetal soft index abnormalities

Among the 200 maternal fetal secondary ultrasound screening cases included this time, a total of 67 cases of soft index abnormalities were detected, with an overall abnormality detection rate of 33.50%. The highest number of cases of various abnormal indexes with strong light spots in the ventricle was detected. The specific distribution of various soft index abnormalities is shown in **Table 1**.

Table 1. Overall distribution of fetal soft index abnormalities [n (%)]

Exception indicator type	n	Proportion
Choroid plexus cyst	11	16.42
Renal pelvis separation	17	25.37
Ventricular bright spot	21	31.34
Intestinal echogenicity	9	13.43
Lateral ventriculomegaly	9	13.43
Total	67	100.00

3.2. Effect of follow-up management of cases with abnormal fetal soft indicators

After standardized follow-up management of 67 cases with abnormal soft indicators, 64 cases were followed up and 3 cases were lost to follow-up. The overall follow-up completion rate is good. Most abnormal indicators can gradually disappear with fetal development. The overall outcome is good. **Table 2**.

Table 2. Effect of follow-up management of abnormal fetal soft index cases [n (%)]

Observation items	n	Proportion
Follow-up completed	64	95.52
Lost to follow-up	3	4.48
Abnormal indicators return to normal	60	89.
Indicators continue to be slightly abnormal	7	5510.
		45

3.3. The occurrence of adverse pregnancy outcomes in abnormal cases

After full follow-up and intervention in 67 cases of fetal soft index abnormalities, the overall proportion of adverse pregnancy outcomes was low, no severe fetal malformations and adverse pregnancy events occurred, and the overall prognosis of mother and baby was good. **Table 3**.

Table 3. The occurrence of adverse pregnancy outcomes in abnormal cases [n (%)]

Ending type	n	Proportion
Premature birth	1	1.49
Fetal growth retardation	1	1.49
Minor abnormalities in newborns	0	0.00
Abnormal amniotic fluid	2	2.99
Overall incidence of adverse outcomes	4	5.97

4. Discussion

Fetal ultrasound soft index abnormalities are a very common phenomenon in mid-trimester ultrasound screening. Such abnormalities are not pathological structural malformations. Most of them are temporary physiological fluctuations in the fetal growth and development stage. They will gradually subside on their own as the gestational age increases and the fetal organs mature. However, clinical medical research can confirm that long-term soft index abnormalities that do not subside and multiple abnormal indicators combined will slightly increase the risk of fetal chromosomal abnormalities and intrauterine development abnormalities. District-level maternal and child health care institutions are responsible for the basic work of prenatal screening and pregnancy care at the grassroots level. They serve a large number of pregnant women with a complex population structure. The traditional prenatal management model only focuses on the detection of ultrasound screening and does not carry out continuous follow-up and control of abnormal cases. The lack of follow-up work after screening will prevent some potential risks from being identified in time, which is also a major shortcoming of grassroots prenatal care work. The standardized special follow-up management model is built based on the work characteristics of grassroots maternal and child institutions, and a full-process management and control plan is developed around the reversibility and risk characteristics of fetal soft index abnormalities, which can effectively fill the loopholes in traditional prenatal management and improve the level of refined management of fetal abnormality cases at the grassroots level [4,5].

From the research data of 200 secondary ultrasound screening cases of pregnant women, it can be seen that the overall detection rate of fetal soft index abnormalities is 33.50%, and the detection rate of central ventricular bright spots and renal pelvic separation ranks first and second. This result is consistent with the big data characteristics of domestic prenatal secondary ultrasound screening. The high incidence of ventricular bright spots is related to the immaturity of fetal heart valves and minor abnormalities in local myocardial calcification. Renal pelvic separation is mostly related to short-term imperfect development of the fetal urinary system and maternal hormone fluctuations during pregnancy. Most of these two types of abnormalities do not require special clinical intervention and can recover on their own with only dynamic monitoring. This also shows that fetal soft index abnormalities are generally minor physiological abnormalities, and there is no need for excessive clinical intervention. Follow-up monitoring is the core management and control method for such abnormalities. In the past, the routine management model at the grassroots level did not establish a follow-up mechanism for such minor abnormalities. Many pregnant women lacked awareness of abnormal indicators and were prone to extreme anxiety or neglect of re-examination, which is not conducive to the overall management and control of pregnancy. Standardized follow-up management allows all abnormal cases to be tracked throughout the entire process through exclusive filing and classification management, thus avoiding the root cause of missed cases and

mismanagement [6].

The follow-up management effect data can fully reflect the application value of the special follow-up model. In this study, the follow-up completion rate of abnormal cases reached 95.52%, and only a few cases were lost to follow-up. At the same time, the overall normalization rate of abnormal indicators reached 89.55%. Most fetal soft indicator abnormalities can be successfully resolved with the assistance of standardized follow-up and pregnancy intervention. The core reason for this result is that systematic follow-up management has changed the traditional passive follow-up model. It ensures the integrity of re-examination through active reminders and stratified follow-up. At the same time, combined with personalized pregnancy guidance, it corrects the adverse pregnancy habits of pregnant women. A stable maternal physiological state can provide good basic conditions for fetal organ development and accelerate the disappearance of physiological abnormal indicators. The stratified follow-up model can adjust the monitoring frequency according to the abnormal risk level, which can not only avoid the waste of medical resources caused by excessive re-examination of low-risk cases, but also strengthen the monitoring of medium-risk cases with abnormal cases, timely capture subtle changes in fetal development, and make follow-up management more scientific and reasonable [7].

From the perspective of pregnancy outcomes, the overall adverse pregnancy outcome rate in the 67 abnormal cases was only 5.97%, and there were no severe fetal development abnormalities or serious adverse pregnancy events. This can prove that standardized follow-up management can effectively control the potential pregnancy risks caused by abnormal fetal soft indicators. Adverse pregnancy risks associated with abnormal fetal soft indicators are mostly potential and minor risks. Through continuous dynamic monitoring, cases with continued aggravation of indicators can be detected in time, and then referred to higher-level medical institutions for further prenatal diagnosis in a timely manner, effectively avoiding the occurrence of severe adverse outcomes. At the same time, full pregnancy health guidance can effectively improve the physical and mental status of pregnant women, reduce common adverse problems such as premature birth, abnormal amniotic fluid, and fetal development retardation caused by maternal factors, and comprehensively ensure the safety of mothers and babies during pregnancy. For a small number of fetuses that still have minor abnormalities after the follow-up, most of these abnormalities will not affect the growth and development of the newborn. Subsequent neonatal physical examinations can be continued for monitoring without excessive clinical intervention [8].

5. Conclusion

In summary, district-level maternal and child institutions implement systematic and standardized clinical follow-up management for cases with abnormal fetal ultrasound soft indicators, which can effectively improve the completion of follow-up work, promote the regression and recovery of abnormal fetal soft indicators, reduce the probability of adverse pregnancy outcomes, and have high grassroots clinical promotion value.

Disclosure statement

The author declares no conflict of interest.

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