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血清抑制素-A 表达联合经腹部超声对宫外孕的诊断价值分析*

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摘要 目的:探讨血清抑制素-A 表达联合经腹部超声对宫外孕的诊断价值。**方法:**选取我院 2018 年 1 月到 2021 年 8 月共收治的 60 例宫外孕患者作为研究对象,将其分为观察组,另取同期来我院体检的 60 例正常妊娠孕妇作为对照组,对所有孕妇均行血清抑制素-A(INH-A)、碱性磷酸酶(ALP)、 β -人绒毛膜促性腺激素(β -HCG)检测,并对所有孕妇进行经腹部超声诊断。对比两组患者血清中 ALP、 β -HCG 与 INH-A 表达水平,对比两组孕妇经腹部超声诊断结果,分析两组孕妇血清 INH-A 和经腹部超声单一诊断与联合诊断对宫外孕的诊断价值。**结果:**观察组孕妇 ALP、 β -HCG 水平明显低于对照组,INH-A 水平明显高于对照组($P<0.05$);观察组孕妇无胎心搏动、宫内无孕囊、附件区有包块以及子宫内膜厚度小于 10 mm 情况明显高于对照组($P<0.05$);联合诊断检出率明显高于血清抑制素-A 和经腹部超声($P<0.05$),联合诊断的误诊率和漏诊率明显低于血清 INH-A 和经腹部超声($P<0.05$);联合诊断的准确度、敏感度明显高于其他两组单一检查方法($P<0.05$),三种诊断方法在特异性、阳性预测值和阴性预测值方面的检测价值对比并无显著差异($P>0.05$)。**结论:**应用血清抑制素-A 表达联合经腹部超声诊断可提升宫外孕诊断的准确度与敏感性,因此可考虑对临床症状疑似宫外孕的患者应用两者联合诊断,提升诊断准确率。

关键词:血清抑制素-A;经腹部超声;宫外孕;诊断价值;诊断准确率

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Diagnostic Value of Serum INH-A Expression Combined with Transabdominal Ultrasound in Ectopic Pregnancy*

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ABSTRACT Objective: To investigate the diagnostic value of serum INH-A expression combined with transabdominal ultrasound in ectopic pregnancy. **Methods:** 60 patients with ectopic pregnancy treated in our hospital from January 2018 to August 2021 were selected as the research object and divided into the observation group. Another 60 normal pregnant women who came to our hospital for physical examination in the same period were selected as the control group. All pregnant women were treated with serum inhibin-A (inh-a), alkaline phosphatase (ALP) β -Human chorionic gonadotropin (β -All pregnant women were diagnosed by transabdominal ultrasound. The expression levels of ALP, β -HCG and INH-A in serum of the two groups were compared, and the diagnostic results of transabdominal ultrasound were compared between the two groups. The diagnostic value of single diagnosis and combined diagnosis of serum INH-A and transabdominal ultrasound in ectopic pregnancy of the two groups were analyzed. **Results:** ALP of pregnant women in the observation group β - The level of hCG was lower than that of the control group, and the level of INH-A was higher than that of the control group ($P<0.05$). In the observation group, the incidence of no fetal heart beat, no intrauterine pregnancy sac, adnexal mass and endometrial thickness less than 10 mm were higher than those in the control group ($P<0.05$). By comparing the detection rate of ectopic pregnancy in 72 patients, it was found that the detection rate of combined diagnosis was significantly higher than that of serum INH-A and transabdominal ultrasound, and the misdiagnosis rate and missed diagnosis rate of combined diagnosis were lower than that of serum INH-A and transabdominal ultrasound ($P<0.05$); By comparing the detection value of different tests, it was found that the accuracy and sensitivity of combined diagnosis were significantly higher than those of the other two single test methods ($P<0.05$), and there was no difference in the

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detection value of specificity, positive predictive value and negative predictive value among the three diagnostic methods ($P>0.05$). **Conclusion:** The application of serum INH-A expression combined with transabdominal ultrasound diagnosis can improve the accuracy and sensitivity of ectopic pregnancy diagnosis, so it can be considered for patients with suspected clinical symptoms of ectopic pregnancy to apply the combined diagnosis, improve the diagnostic accuracy.

Key words: Serum INH-A; Transabdominal ultrasound; Ectopic pregnancy; Diagnostic value; Diagnostic accuracy

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前言

宫外孕是一种常见的妇科疾病,也称为异位妊娠,其中输卵管妊娠为最常见病症,其引发原因主要是输卵管内或者周围发炎,通畅性差,导致孕卵的异常运行,使得孕卵在输卵管内进行着床、发育等活动,最终出现输卵管妊娠破裂或流产^[1]。宫外孕在破裂和流产前通常无明显症状,但有少量阴道流血、腹痛和闭经的情况。破裂后会出现阴道出血、腹痛反复,甚至休克,因此对于宫外孕患者早期诊断,提升确诊率具有重要价值^[2]。碱性磷酸酶(Alkaline phosphatase, ALP)、 β -人绒毛膜促性腺激素(β -Human Chorionic Gonadotropin, β -HCG)是临床上早期诊断宫外孕的重要方式。随着临床超声技术的发展,超声对于宫外孕的早期诊断也具有重要价值。近年来有研究发现^[3,4],血清抑制素-A(Inhibin-A, INH-A)作为胎盘合体滋养细胞分泌和合成的一种糖蛋白激素,可直接反应人体胎盘功能,半衰期较短,对

于胎盘功能的反应较 β -HCG 优越。因此,本文探讨了血清抑制素-A 表达联合经腹部超声对宫外孕的诊断价值。

1 资料与方法

1.1 一般资料

选取 2018 年 1 月到 2021 年 8 月我院收治的 60 例宫外孕患者,将其作为观察组。

纳入标准:经术后确诊为异位妊娠的患者,且出现宫颈举痛、附件区压痛、子宫增大、腹部压痛、阴道出血或腹痛等临床症状^[5];临床资料完整;患者对本研究知情并签署同意书。

排除标准:合并黄体破裂等其他妇科病者;子宫畸形者;合并恶性肿瘤者;合并神经系统疾病者。

另取同期来我院体检的 60 例正常妊娠孕妇作为对照组。两组患者一般资料对比无差异($P>0.05$)。本研究经医院医学伦理委员会批准。

表 1 一般资料

Table 1 General information

Groups	n	Average age (years)	Gestational week (weeks)	Pregnancy times (Times)	Menopause time (d)
Observation group	60	26.63 $\pm$ 3.52	6.42 $\pm$ 1.25	1.54 $\pm$ 0.63	26.52 $\pm$ 4.25
Control group	60	26.32 $\pm$ 4.24	6.13 $\pm$ 1.63	1.45 $\pm$ 0.75	27.12 $\pm$ 5.31

1.2 方法

1.2.1 血清指标检测 所有受试者均在检查当天空腹,抽取肘静脉血 5 mL,并以 3000 r/s 的离心速度将血液样本离心 5 分钟,收集血清。采用全自动微粒子化学发光免疫分析法(贝克曼公司)检测血清 INH-A、ALP、 β -HCG 及孕酮。依据说明书进行操作,每批次测定均做标准曲线以及质量控制。

1.2.2 腹部超声 应用彩色多普勒超声诊断仪(生产企业:美国 GE 公司),将探头频率设置为 7.5 MHz。在行超声诊断前,使患者排空膀胱内尿液,随后在超声探头上套上避孕套,涂抹润滑剂,取膀胱截石位,在患者臀部垫上软垫后,将探头放置到阴道内探查。在探查过程中要注意仔细扫描患者的周围附件区和子宫情况,并采取斜切、横切和纵切的方式,盘点患者卵巢与子

宫异位情况。对于既往有剖宫产史或子宫手术史的患者可重点探查瘢痕部位情况。

1.3 统计学方法

采取 SPSS 23.0 进行分析,计数资料以(n/%)表示,进行 χ^2 检验;计量资料以($\bar{x} \pm s$)表示,组间比较采用 t 检验;以 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 孕妇 ALP、 β -HCG 与 INH-A 表达水平对比分析

观察组孕妇 ALP、 β -HCG 水平明显低于对照组,INH-A 水平明显高于对照组($P<0.05$),如表 1 所示。

表 2 两组孕妇 ALP、 β -HCG 与 INH-A 表达水平对比分析($\bar{x} \pm s$)

Table 2 ALP and β - Comparative analysis of hCG and inh-a expression levels ($\bar{x} \pm s$)

Groups	n	ALP(MIU/mL)	β -HCG(MIU/mL)	INH-A(ng/L)
Observation group	60	29.63 $\pm$ 6.52*	1585.42 $\pm$ 285.25*	298.54 $\pm$ 35.63*
Control group	60	45.32 $\pm$ 9.24	3156.13 $\pm$ 528.63	141.45 $\pm$ 39.35

Note: Compared with control group, * $P<0.05$.

2.2 孕妇经腹部超声诊断结果对比分析 孕囊、附件区有包块以及子宫内膜厚度小于 10 mm 情况明显
最终腹部超声诊断发现,观察组孕妇无胎心搏动、宫内无 高于对照组($P<0.05$)。

表 3 两组孕妇经腹部超声诊断结果对比分析(n,%)

Table 3 Comparative Analysis of transabdominal ultrasound diagnosis results of two groups of pregnant women (n,%)

Groups	n	No fetal heart beat	Intrauterine absence of gestational sac	Package block in attachment area	Endometrial thickness less than 10 mm
Observation group	60	57(95.00)*	51(85.00)*	48(80.00)*	44(73.33)*
Control group	60	1(1.67)	0(0.00)	2(3.33)	3(5.00)

Note: Compared with control group, * $P<0.05$.

2.3 60 例患者血清 INH-A、经腹部超声以及联合诊断宫外孕检出率对比分析 ($P<0.05$), 联合诊断的误诊率和漏诊率明显低于血清 INH-A 和经腹部超声($P<0.05$)。

联合诊断检出率明显高于血清 INH-A 和经腹部超声

表 4 60 例患者血清 INH-A、经腹部超声以及联合诊断宫外孕检出率对比分析(n,%)

Table 4 Comparative analysis of detection rates of serum INH-A, transabdominal ultrasound and combined diagnosis of ectopic pregnancy in 60 patients (n,%)

Diagnostic method	Detection rate	Misdiagnosis rate	Missed diagnosis rate
Transabdominal ultrasound	53(88.33)	2(3.33)	5(8.33)
Serum INH-A	45(75.00)	6(10.00)	9(15.00)
Joint diagnosis	58(96.67)	1(1.67)	1(1.67)
χ^2	15.371	6.060	8.243
P	<0.001	0.048	0.016

2.4 血清 INH-A 和经腹部超声单一诊断与联合诊断对宫外孕的诊断价值 法($P<0.05$),三种诊断方法在特异度、阳性预测值和阴性预测值方面的检测价值对比并无显著差异($P>0.05$)。

联合诊断的准确度、敏感度明显高于其他两组单一检查方

表 5 血清 INH-A 和经腹部超声单一诊断与联合诊断对宫外孕的诊断价值

Table 5 Diagnostic value of single and combined diagnosis of serum INH-A and transabdominal ultrasound in ectopic pregnancy

Diagnostic method	Accuracy	Specificity	Sensitivity	Positive predictive value	Negative predictive value
Transabdominal ultrasound	88.33 %(53/60)	75.00%(6/8)	90.00%(54/60)	96.15%(50/52)	46.67%(7/15)
Serum INH-A	75.00 %(45/60)	62.50%(5/8)	85.00%(51/60)	92.31%(48/52)	38.71%(12/31)
Joint diagnosis	96.67%(58/60)	87.50%(7/8)	100.00%(60/60)	98.08%(51/52)	52.38%(11/21)
χ^2	17.025	1.334	6.242	1.475	0.972
P	<0.001	0.513	0.044	0.479	0.614

3 讨论

宫外孕是女性的常见疾病类型,也是导致育龄期女性死亡的一个重要原因^[6]。此外,宫外孕发病后患者会出现持续出血或疼痛现象,甚至对患者的生育能力产生影响。当前阴道彩超和腹部超声在宫外孕诊断中得到广泛应用,可在患者包块破裂之前及时确诊,但在孕早期依照经腹部彩超结果依然存在误诊或漏诊现象^[7]。研究发现^[8,9],异位妊娠的原因为:受精卵于子宫外着床,且具有发育不全的滋养细胞,合体滋养细胞所合成的

β -HCG 以及 ALP 大幅度降低。孕酮作为一种卵巢合成性激素,妊娠 8 周内,该激素大部分是由卵巢黄体产生,8 周之后,则由胎盘进行分泌,在孕 12 周前,其会保持在一定水平,因此可知孕酮的测定对于判断胎盘功能以及黄体十分重要^[10-12]。但因血清孕酮继发于异位滋养细胞所产生的 β -HCG 不足,因此导致异位妊娠患者的血清孕酮表达水平降低,可说明孕酮水平与异位妊娠发生息息相关,但其原因可能是因黄体功能不足所导致。当前异位妊娠诊断的金标准为 β -HCG,但据报道^[13-15],在胎盘单位排出 1 h 内血清 INH-A 会明显降低,而在 4 h 之后

β -HCG 才会降低, 因此可认为血清 INH-A 的敏感性可能较 β -HCG 高。

本研究结果表明: 观察组孕妇 ALP、 β -HCG 水平明显低于对照组, INH-A 水平明显高于对照组, 表明 ALP、 β -HCG、INH-A 对宫外孕的诊断均具有重要价值。这一结果与 Polanski L 等^[16]以及杜雨轩等人^[17]的结果一致, 即 ALP、 β -HCG 在宫外孕患者血清中明显升高, 具有较高的诊断价值。结合现有文献进一步分析可知: 血清抑制素 -A 属于转化生长因子 - β 超家族, 由胎盘滋养细胞合成分泌入母血的一种糖蛋白激素。该血清因子可参与生殖内分泌调节, 进而对胎盘功能产生影响, 属于早期流产的特异性指标, 因此在宫外孕患者中的表达量高于对照组。血清 INH-A 对妊娠结局预测准确性明显高于 β -HCG, 但本研究结果中并未将 β -HCG 与血清抑制素 -A 的诊断准确性进行对比, 所以在后续研究中需加大样本量进行深入研究^[18-20]; 最终腹部超声诊断发现, 观察组孕妇无胎心搏动、宫内无孕囊、附件区有包块以及子宫内膜厚度小于 10 mm 情况明显高于对照组。这研究结果与 Balica A C 等^[21]研究结果相似, 即通过经腹部超声与阴道超声能够对宫外孕情况进行诊断, 而且能够进一步检测患者子宫内膜厚度, 从而为临床与治疗提供参考意见。进一步分析可知: 经腹部超声检测是临床上宫外孕诊断的常用方法, 但是一些比较小的包块不容易被检测到^[22,23]。

本研究通过超声诊断发现, 宫外孕患者超声检查会出现明显特征, 例如无胎心搏动、宫内无孕囊、附件区有包块以及子宫内膜厚度小于 10 mm 等, 为临床宫外孕的诊断提供参考; 通过对比 60 例患者宫外孕检出率发现, 联合诊断检出率明显高于血清抑制素 -A 和经腹部超声, 联合诊断的误诊率和漏诊率明显低于血清 INH-A 和经腹部超声, 由此证明, 应用联合诊断对宫外孕的诊断准确率明显高于血清 INH-A 与经腹超声单一诊断。本研究与 Shah N J 等^[24]研究类似, 即对宫外孕患者应用 β -HCG 联合腹部超声诊断优于单一诊断, 且诊断准确率达 90% 以上; 但与 Dabrowski M 等^[25]研究结果不同, 即通过腹部超声诊断宫外孕准确率较高, 血清 INH-A 诊断确诊率较低, 远低于 β -HCG 诊断, 这可能是因为本研究数据样本量过少, 因此还需在后续研究中增加样本量进行持续深入分析^[26-28]; 通过不同检查的检测价值对比发现, 联合诊断的准确度、敏感度明显高于其他两组单一检查方法, 三种诊断方法在特异度、阳性预测值和阴性预测值方面的检测价值对比并无显著差异。本研究结果与 Wannaporn S 等人^[29]结果相似, Wannaporn S 等通过母体血清 INH-A 与不良妊娠结局相关性的队列研究发现, 血清 INH-A 表达水平越高, 异位妊娠发生率越高, 两者之间呈正相关, 因此可考虑将血清 INH-A 作为诊断异位妊娠的临床指标之一。进一步分析可知, 应用血清 INH-A 联合超声诊断准确度和敏感度明显优于单一诊断, 且通过早期准确诊断能够为异位妊娠的治疗提供依据, 为保守治疗争取宝贵时间, 降低破裂后对患者生命所构成的威胁, 因此应用联合诊断对宫外孕的治疗与这段具有积极作用^[30]。另外还有研究发现^[31], 血清 INH-A 对于高危妇女早期与中期子痫前期具有高效预测作用。以上均表明血清 INH-A 对于妊娠期的不同疾病均具有一定预测作用, 还需在后续研究中加深探索。

综上所述, 应用血清抑制素 -A 表达联合经腹部超声诊断可提升宫外孕诊断的准确度与敏感性, 因此可考虑对临床症状疑似宫外孕的患者应用两者联合诊断, 提升诊断准确率。

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