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腹部超声检查对新生儿坏死性小肠结肠炎的临床应用价值研究

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摘要 目的:探究腹部超声检查对新生儿坏死性小肠结肠炎(NEC)的临床应用价值。**方法:**选取 2009 年 1 月-2016 年 12 月我院收治 116 例患有 NEC 的新生儿作为本次研究的对象,依据修正 Bell-NEC 分级标准将之分为确诊组(n=50)和疑似组(n=66),再依据临床转归分为手术组(n=37)和内科治愈组(n=79),对比确诊组和疑似组的腹部超声与 X 线检查结果,以及内科治愈组和手术组的腹部超声与 X 线检查结果。**结果:**在确诊组和疑似组中,腹部超声对肠壁积气、门静脉积气的检出率均高于 X 线摄片($P < 0.05$)。腹部超声还发现了肠道蠕动缓慢、肠道蠕动消失和腹腔积液;内科治愈组腹部超声对肠壁增厚、肠管扩张和腹腔积液的检出率低于手术组($P < 0.05$);内科治愈组 X 线摄片对肠管扩张的检出率低于手术组($P < 0.05$)。**结论:**腹部超声能够提高 NEC 的检出率,且对 NEC 的临床转归有较好的预测作用。

关键词:腹部超声;坏死性小肠结肠炎;新生儿;诊断;应用价值

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Clinical Value of Abdominal Ultrasonography in the Diagnosis of Neonatal Necrotizing Enterocolitis

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ABSTRACT Objective: To explore clinical value of abdominal ultrasonography in the diagnosis of neonatal necrotizing enterocolitis(NEC). **Methods:** A total of 116 patients with NEC in our hospital from January 2009 to December 2016 were selected as the objects of this study. According to the modified Bell-NEC classification criteria,the patients were divided into diagnosis group(n=50) and suspected group(n=66). According to clinical outcome, the patients were divided into operation group(n=37)and medical cure group(n=79). The results of abdominal ultrasound and X-ray examination were compared between the diagnosis group and the suspected group, and he results of abdominal ultrasound and X-ray examination were compared between the operation group and the medical cure group. **Results:** In the diagnosis group and the suspected group, the detection rate of abdominal ultrasound on abdominal wall gas and portal venous gas were higher than those of X-ray examination ($P < 0.05$). Abdominal ultrasound also revealed bowel slow peristalsis, loss of peristalsis and seroperitoneum.The detection rate of abdominal ultrasound on bowel wall thickening, intestinal dilatation and seroperitoneum in medical cure group were lower than those in operation group ($P < 0.05$). The detection rate of X-ray film on intestinal dilatation in medical cure group was lower than that in operation group ($P < 0.05$). **Conclusion:** Abdominal ultrasonography can improve the detection rate of NEC, and has a better predictive effect on the clinical outcome of NEC.

Key words: Abdominal ultrasound; Necrotizing enterocolitis; Newborn; Diagnosis; Application value

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前言

坏死性小肠结肠炎(necrotizing enterocolitis, NEC)是临床新生儿较为常见的胃肠道急症,作为一种获得性疾病,多发于早产儿或患病的新生儿,以粘膜坏死为主要特征,严重者甚至累及尾肠深层,其患病处多为回肠末端,较少出现在近端小肠和结肠^[1,2]。临床上表现为腹胀的肠梗阻,胆汁性残留、呕吐胆

汁等,严重者表现为体温不稳、嗜睡、代谢性酸中毒等^[3]。NEC 病因不明,常需要外科手术干预,具有较高的致死率,严重威胁患儿的生命健康^[4]。近年来,虽然 NEC 的临床治疗技术有了显著发展,NEC 的死亡率也有所下降,但在早产的低体重儿中仍有 30%的患儿因 NEC 致死^[5,6]。早期的诊断与治疗是影响 NEC 临床转归的重要手段,目前临床上一般通过 X 线片对 NEC 进行诊断,但其存在敏感性差、诊断结果与临床症状不符等问题,故诊断效果并不理想^[7]。腹部超声相对 X 线片检查具有无创、无辐射、可反复检查等优势,近些年在 NEC 的诊断评估中有所应用^[8]。本研究旨在探讨腹部超声对新生儿 NEC 的临床应用价值,以期临床选取诊断 NEC 的方法提供参考。现报告如下。

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1 资料与方法

1.1 一般资料

选取 2009 年 1 月 -2016 年 12 月我院收治的 116 例患有 NEC 的新生儿作为研究对象,纳入标准:①符合 NEC 相关诊断标准^[9],并可参考修正 Bell-NEC 分级标准^[10]进行诊断者;②发病日龄<生后 30 天;③临床表现为呕吐、腹部膨胀等症状;④接受腹部超声与 X 线片检查,且二者检查时间间隔在 24 h 内。排除标准:①病历资料不完整者;②存在先天性肠闭锁、肠旋转障碍等肠道畸形疾病者;③合并有先天性心脏病者。其中,男 69 例,女 47 例,胎龄 27~41 周,平均(33.9±4.6)周;体重 1.3~3.1 kg,平均(2.2±0.8)kg。

1.2 分组方法

依据修正 Bell-NEC 分级标准与临床症状将患者分为确诊组(n=50)和疑似组(n=66),其中疑似判定标准为:临床症状表现为体温不稳定、心动过缓、嗜睡,轻度腹胀、大便潜血阳性。影像学表现为正常或肠管扩张,轻度肠梗阻;确诊判定标准为:临床症状同疑似,轻度血小板减少,肠鸣音消失和(或)腹部触痛。影像学表现为肠管扩张、梗阻,肠壁积气征。之后再依据临床转归分为手术组(n=37)和内科治愈组(n=79)。

1.3 检查方法

X 线摄片检查:使用使用西门子公司的 DR Siemens Ysio 型 X 线诊断仪,摄腹部仰卧前后位、腹部立位片及侧卧位水平

投照。观察是否存在肠壁增厚、肠壁积气、门静脉积气等征象。腹部超声检查:使用日本东芝公司生产的 TOSHIBA Aplio500 彩色多普勒超声诊断仪,经腹部多切面对患儿腹腔进行扫描,在扫面过程中需密切关注图像变化,对于肠壁应重点监测,主要观察其形状和回声是否存在,判断其是否正常。若肠壁粘膜下监测到点状气体回声,浆膜下监测到有条状高回声,则可认为可能有肠壁积气;观察肠壁的回声状态,了解其是否有增厚表现;在检查门静脉过程中,若监测到门静脉分支或主干中有气泡样高回声,或在肝实质门静脉分支中有条片状高回声则可认为可能有门静脉积气;在检查肠腔或腹腔过程中则须注意观察是否存在积液或扩张。此外,在进行腹部纵向与横向扫描时,可采用加压探头进行检查,准确地对积气所在部位进行判断,避免出现积气假象。

1.4 统计学方法

使用 SPSS18.0 统计学软件对数据进行分析,计数资料用百分比(%)表示,组间对比采用 χ^2 检验,计量资料用($\bar{x} \pm s$)表示,组间对比采用 t 检验,若 $P < 0.05$,则说明差异具有统计学意义。

2 结果

2.1 确诊组和疑似组的腹部超声与 X 线检查结果比较

在确诊组和疑似组中,腹部超声对肠壁积气、门静脉积气的检出率均高于 X 线摄片,差异有统计学意义($P < 0.05$)。腹部超声还发现了肠道蠕动缓慢、肠道蠕动消失和腹腔积液。见表 1。

表 1 确诊组和疑似组的腹部超声与 X 线检查结果比较

Table 1 Comparison the inspection result of abdominal ultrasound and X-ray in the diagnosis group and the suspected group

Items	Diagnosis group (n=50)				Suspected group (n=66)			
	Abdominal ultrasound	X-ray	χ^2 value	P value	Abdominal ultrasound	X-ray	χ^2 value	P value
Bowel wall thickening	15(30.00)	18(36.00)	1.541	0.126	5(22.73)	20(30.30)	2.481	0.061
Intestinal wall gas	20(40.00)	9(18.00)	4.573	0.035	7(10.61)	1(1.52)	5.412	0.025
Portal venous gas	33(66.00)	11(22.00)	11.524	0.000	12(18.18)	2(3.03)	7.768	0.013
Intestinal dilatation	16(32.00)	13(26.00)	2.687	0.061	18(27.27)	20(30.30)	1.571	0.112
Bowel slow peristalsis	29(58.00)	-	-	-	30(45.45)	-	-	-
Loss of peristalsis	14(28.00)	-	-	-	10(15.15)	-	-	-
Seroperitoneum	27(54.00)	-	-	-	13(19.70)	-	-	-

2.2 内科治愈组和手术组的腹部超声检查结果比较

检出率低于手术组,差异有统计学意义($P < 0.05$)。见表 2。

内科治愈组腹部超声对肠壁增厚、肠管扩张和腹腔积液的

表 2 内科治愈组和手术组的腹部超声结果比较

Table 2 Comparison of abdominal ultrasound results between medical cure group and operation group

Items	Medical cure group (n=79)	Operation group (n=37)	χ^2 value	P value
Bowel wall thickening	15(18.99)	14(37.84)	5.413	0.009
Intestinal wall gas	8(10.13)	5(13.51)	0.249	0.437
Portal venous gas	14(17.72)	10(27.03)	2.046	0.075
Intestinal dilatation	21(26.58)	21(56.76)	4.678	0.016
Bowel slow peristalsis	35(44.30)	14(37.84)	1.045	0.095
Loss of peristalsis	8(10.13)	6(16.22)	0.414	0.214
Seroperitoneum	12(15.19)	25(67.57)	12.571	0.000

2.3 内科治愈组和手术组的 X 线摄片结果比较

差异有统计学意义($P < 0.05$),见表 3。

内科治愈组 X 线摄片对肠管扩张的检出率低于手术组,

表 3 内科治愈组和手术组的 X 线摄片结果比较

Table 3 Comparison of X-ray results between medical cure group and operation group

Items	Medical cure group(n=79)	Operation group(n=37)	χ^2 value	P value
Bowel wall thickening	30(37.97)	15(40.54)	1.457	0.075
Intestinal wall gas	5(6.33)	4(10.81)	0.845	0.154
Portal venous gas	5(6.33)	5(13.51)	0.971	0.083
Intestinal dilatation	16(20.25)	19(51.35)	4.946	0.037

3 讨论

近年来,随着我国围生期医疗技术水平的提高,早产儿特别是低体重儿的存活率也随之上升^[11,12]。NEC 作为新生儿的常见疾病,临床上表现为呕吐、恶心和便血等症状,随着病情的发展可导致小肠和结肠局部或全部坏死,对患者的生命构成严重威胁^[13,14]。相关报道指出,NEC 患儿的病死率在 50% 以上,且部分患者隐匿发病,因此病情容易被贻误^[15,16]。早期诊断与 NEC 患者的预后有密切联系,因此有关 NEC 诊疗手段的选择已成为该领域研究的热点^[17,18]。随着超声技术的发展,超声探头分辨率不断提高,其在 NEC 早期诊断中的应用价值也逐渐得到重视^[19]。目前对于 NEC 的具体发病机制尚无定论,已知的肠缺血损害可破坏肠道产生粘液,导致肠道易受细菌侵袭。儿童所摄入的乳汁可为肠道细菌繁殖提供了充足的底物,而细菌可渗透过肠壁,聚集并产生氢气,进而出现 X 线上特征性的肠壁积气,气体并可进入门静脉,通过腹部 X 线平片或肝脏 B 超可见到肝脏上面的门静脉积气^[20,21]。

本次研究比较并分析了腹部超声与传统 X 线摄片在 NEC 中的应用效果,结果显示在确诊组和疑似组中,腹部超声对肠壁积气、门静脉积气的检出率均高于 X 线摄片,差异有统计学意义。腹部超声还发现了肠道蠕动缓慢、肠道蠕动消失和腹腔积液。传统的 X 线摄片检查所得到的声像图主要显示出的包括结肠里气体、肠道僵直、肠道增厚和管状样肠管扩张等,但是这些征象与肠梗阻类似,故在临床诊断中存在较大缺陷^[22-24]。腹部超声则能清晰地对肠壁、腹腔和门静脉等结构进行呈现,且可以在 NEC 早期发现肠道蠕动缓慢、肠道蠕动消失和腹腔积液等 X 线摄片无法发现的微小变化,而对肠壁积气、门静脉积气检查的敏感性也更高,因此更有助于 NEC 的诊断。有研究发现^[25,26],NEC 患儿首次腹部超声的灵敏度、特异度及准确度均优于 X 线摄片,由此可见腹部超声在 NEC 中有较高的诊断价值。此外,本研究还分析了两种手段在 NEC 临床转归预测中的价值,结果显示内科治愈组腹部超声对肠壁增厚、肠管扩张和腹腔积液的检出率低于手术组;内科治愈组 X 线摄片对肠管扩张的检出率低于手术组。由此可知,超声显示肠壁增厚、肠管扩张和腹腔积液以及 X 线摄片显示肠管扩张是 NEC 临床不良转归的影响因素。由于 NEC 患者肠道存在感染,肠道蠕动功能差,因此肠腔中往往有大量气体积存,肠壁也因此变薄,极易发生穿孔,故肠管扩张是 NEC 手术的重要危险指标^[27,28]。而相比于 X 线摄片,腹部超声除了可以观察到肠管扩张,对肠壁增厚和腹腔积液的检出率更高,因此其检查结果作为 NEC 临床

转归预测的参考价值更高。既往研究^[29,30]还表明,腹部超声在 NEC 的诊断与预测临床转归中均有重要作用,且不存在放射性伤害,可密切监测病情,适合临床推广。

综上所述,腹部超声能够提高 NEC 的检出率,且对 NEC 的临床转归有较好的预测作用,具有在临床上推广的价值。

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