JOURNAL READING

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103.05.19

Brief Report

Accuracy of emergency physician-performed limited echocardiography for right ventricular strain☆,☆☆

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American Journal of Emergency Medicine 32 (2014) 371–374

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- Goal:之前尚無研究顯示在急診的超音波診斷RV dilatation(PE)的信度, 故在此比較
- Method: 在Yale醫院搜集2006~2008(12month), 共407位病患
  - 主訴為nontraumatic的primarily chest pain, dyspnea, and/or hypotension)
  - 72小時內做到由心臟科醫師執行的echo
  - 急診只判別RV dilatation, 定義: RV/LV>=1
  - 心臟科醫師判定RVS 及 RV dilatation, RVS定義: RV hypokinesis, paradoxical septal motion

Table 1
Limited and consultative echo examination characteristics (N = 407)

Patient characteristics		
Age, mean (±SD)	62 ± 18	
Male, n (%)	206 (50)	
Provider skill level[a], n (%)		
PGY-1	116 (29)	
PGY-2	23 (6)	
PGY-3	96 (24)	
PGY-4	61 (15)	
Fellow	62 (15)	
Attending	43 (11)	
Other[b]	10 (2)	
RVS, n (%)	Limited echo	Consultative echo
Present	25 (6)	73 (18)
LVEF[c], n (%)		
Normal	270 (66)	288 (71)
Moderate	66 (16)	58 (14)
Severe	66 (16)	46 (11)
Hyperdynamic	4 (1)	11 (2.7)
Inadequate	1 (0.2)	0 (0)
Effusion[d], n (%)		
None	342 (84)	359 (88)
Small	49 (12)	32 (7.9)
Moderate	9 (2)	8 (2)
Large	7 (2)	8 (2)

Abbreviations: *PGY*, postgraduate year; *LVEF*, left ventricular ejection fraction.
[a] Only applies to limited echo.
[b] Physician assistants, nurse practitioners, medical students.
[c] Left ventricular ejection fraction visually estimated with normal, 50%-70%; moderate, 30%-50%; severe, <30%; hyperdynamic > 70%.
[d] Effusion size visually estimated with small, <1 cm; moderate, 1-2 cm; large, >2 cm.

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- 結論: 急診超音波診斷RV dilatation與心臟科的吻合度0.44, 為中等吻合度.
- 急診診斷RVS的Specificity高(98%)但Sensitivity低(26%); 陽性相似比很高(14), 陰性相似比中等(0.75)

Categorization of RV dilation: Limited vs. Consultative Echocardiography

Consultative echo RV dilation Category	Limited echo RV dilation Category: No	Yes	Total
No	366	12	378
Yes	16	13	29
Total	382	25	407

κ= 0.44 (0.27-0.61)

Categorization of RVS: Limited vs. Consultative Echocardiography

Consultative echo RVS Category	Limited echo RV dilation Category: No	Yes	Total
No	328	6	378
Yes	54	19	29
Total	382	25	407

Sensitivity	Specificity	LR+	LR-
26% (16-37%)	98% (96-99%)	14 (6-35)	0.75 (0.65-0.86)

- 結論: 在急診不能以<u>無RV dilatation</u>來排除PE, 但若有發現, 則PE的可能性高, 且符合submassive PE的定義, 對之後的預後和治療選擇都有幫助
- 限制:
  - 72小時內才會做到心超, 時間不一致
  - 急診把RV dilatation定義為RV/LV>=1, 可能因此喪失sensitivity, 且ER未把RV hypokinesia/septal movement 列入考慮
  - retrospective approach

Original Contribution

Ultrasound evaluation of appendicitis: importance of the 3 × 2 table for outcome reporting☆

Martin Fedko, MD, MHA, MBA [a], Venkatesh R. Bellamkonda, MD [a,*], M. Fernanda Bellolio, MD, MS [a], Erik P. Hess, MD, MSc [a], Christine M. Lohse, MS [b], Torrey A. Laack, MD [a], Michael J. Laughlin Jr. , MD [a], Ronna L. Campbell, MD, PhD [a]

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American Journal of Emergency Medicine 32 (2014) 346–348

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- GOAL: 急診超音波很難看到Appendix, 以前的"急診超音波診斷appendicitis"的研究都沒有把"沒看到"列入統計標準, 使得診斷率被高估

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Method: 蒐集梅約診所2010~2011共12個月的病例, 排除一些病人後, 共有65人

- Inclusion criteria:18y/o以上有右下腹痛
- Exclusion criteria:
  - prior appendectomies,
  - known inflammatory bowel disease, pregnancy,
  - had CT before ultrasound,
  - incomplete medical records,
  - patients who declined research participation,
  - those without follow-up data available

Table 1A
Summary of ultrasound results using traditional 2 × 2 table with evaluable results only

	Appendicitis	No appendicitis		
Visualized positive	7	0	PPV = 1.00	LR+ = infinity
Visualized negative	0	14	NPV = 1.00	LR− = 0
	Sensitivity = 1.00	Specificity = 1.00		

Abbreviations: *PPV*, positive predictive value, *NPV*, negative predictive value, *LR+*, positive likelihood ratio; *LR−*, negative likelihood ratio.

高估

Table 1B
Summary of ultrasound results using 3 × 2 table intention-to-diagnose analysis

	Appendicitis	No appendicitis		
Visualized positive	7	41	PPV = 0.15	LR+ = 0.94
Nonvisualized	3 + 0	41 + 0		
Visualized negative	3	14	NPV = 0.82	LR− = 1.18
	Sensitivity = 0.70	Specificity = 0.25		

低估

Table 1C
Summary of ultrasound results by final outcome, using 3 × 2 table and traditional analysis of test characteristics

建議

	Appendicitis	No appendicitis		
Visualized positive	7	0	PPV = 1.00	LR+ = infinity
Nonvisualized	3	41		LR = 0.4
Visualized negative	0	14	NPV = 1.00	LR− = 0
	Sensitivity = 1.00	Specificity = 1.00		

LR 0.4→Weak evidence to rule out disease

- 結論: 現在許多研究把沒看到appendix當成"visualized negative", 但此篇研究顯示, 若是沒看到appendix, 也不能排除沒有闌尾炎