A RARE CASE OF SPONTANEOUS NEONATAL SPLENIC HAEMORRHAGE

N.K. Kamaludin[1], R.S. Perisamy[1]
[1]Department of Radiology, Sultan Ahmad Shah Medical Centre (SASMEC), Kuantan, Pahang, Malaysia.

***Corresponding author:**
Rajeev Shamsuddin Perisamy, Department of Radiology, Sultan Ahmad Shah Medical Centre (SASMEC), Kuantan, Pahang, Malaysia.Email: rajeevsham@iium.edu.my

DOI: https://doi.org/10.32896/tij.v5n3.1-5
Submitted: 29.05.2025
Accepted: 03.09.2025
Published: 30.09.2025

ABSTRACT:

Background: Spontaneous splenic haemorrhage in neonates is extremely rare and often fatal due to delayed diagnosis from non-specific clinical signs.

Case Presentation: A term neonate presented on day two of life with pallor, tachycardia, and abdominal distension. Severe anaemia was noted. Ultrasound revealed a heterogeneous peri-splenic mass; CT confirmed a large peri-splenic hematoma and hemoperitoneum. Despite emergent splenectomy, the infant deteriorated and received palliative care.

Conclusion: Neonatal splenic haemorrhage, though rare, should be considered in neonates with unexplained anaemia and abdominal distension. Early imaging is critical for diagnosis and timely intervention.

Keywords: Neonatal splenic haemorrhage; spontaneous splenic rupture; neonatal anaemia; hemoperitoneum; abdominal ultrasound; CT scan; splenectomy.

INTRODUCTION

Splenic haemorrhage is extremely rare event in neonates with potentially fatal presentation (1). The initial symptoms of neonatal splenic haemorrhage are non-specific which may lead to the delayed diagnosis in some cases. The goal of this discussion is to explicate the imaging features of this rare event of neonatal splenic haemorrhage with the used of abdominal ultrasound and computed tomography (CT), to aid in establishing the diagnosis of neonatal splenic haemorrhage.

CASE REPORT

A baby girl was delivered at term to a gravida 3, para 2 mother through spontaneous vertex delivery (SVD). Her birth weight (BW) was 3020g, and the 1 and 5 min Apgar scores were 9 and 10, respectively. At day 2 of life, she developed pallor with tachycardia and abdominal distension were observed. Laboratory examination revealed severe anaemia. Abdominal ultrasonography to investigate the cause of neonatal anaemia, revealed an irregular splenic border with a heterogenous mass in peri-splenic region (Figure 1); thus, splenic laceration with hematoma and bleeding was suspected. Abdominal computed tomography (CT) scan showed peri-splenic hematoma, ~5.8 × 3.4 × 6.2 cm in size, and hemoperitoneum indicating splenic laceration (Figure 2). Emergent exploratory laparotomy and splenectomy were performed. During the laparotomy, massive hemoperitoneum and splenic laceration with active bleeding were noted. Despite treatment and surgical interventions, the baby was further deteriorated. Palliative treatment was administered in view of the expected poor outcome and high mortality.

DISCUSSION

Splenic injury is the least common cause of neonatal hemoperitoneum, with less than 50 case reports in the world's literature (4). This is partly due to its well-protected position in the left upper abdominal quadrant (5). The diagnosis of this condition is difficult, and is often discovered at autopsy (3). The triad of pallor, anaemia and abdominal distension has been described as typical clinical presentation of neonatal hemoperitoneum (2), which was observed in our case. Trauma is the most common cause of splenic injury, which includes maternal trauma with precipitate delivery (6) and birth trauma secondary to difficult delivery (4). However, a spontaneous and idiopathic splenic bleeding after a normal delivery have been reported in several studies (7), which is the likely aetiology in our case.

Generally, splenic injury occurs in two stages leading to difficult diagnosis and management. The first stage is the formation of a subcapsular hematoma; this is followed by a sudden capsular rupture responsible for a massive hemoperitoneum with clinical deterioration (8). This staged progression explains the delay in presentation, with most cases presenting beyond 10 hours of life, as in our case, the presentation is at 48 hours of life. Abdominal ultrasound and CT scan are useful tools with high sensitivity in diagnosing the underlying cause of neonatal hemoperitoneum, such as adrenal and splenic haemorrhage (9). As in our case, the primary clinical indication for abdominal ultrasound is to look for adrenal haemorrhage as it is the commonest cause of severe neonatal anaemia. However, splenic injury with hematoma is demonstrated through the abdominal ultrasound, which was inconsistent with clinician suspicion of adrenal hemorrhage. Thus, abdominal CT scan was performed and confirmed the diagnosis. Williams RA et al reported that abdominal CT scan is also important in evaluating the severity of splenic injury, which may guide for further management of splenic injury (10).

Peskin and Orloff in 1958 has described the four criteria of true spontaneous rupture of the spleen, which are: 1) No history of trauma; 2) No evidence of disease; 3) No evidence of perisplenic adhesions or scarring of the spleen; 4) The spleen should be normal on gross and histological examination

apart from the findings of hemorrhage and rupture (11). All of these criteria are in consistent with our case report, thus correlation with clinical history and radiology imaging, the diagnosis of spontaneous neonatal splenic haemorrhage was made.

CONCLUSION

Spontaneous neonatal haemorrhage is extremely rare with high mortality rate, it presents a challenging case to determine the diagnosis. The delay in diagnosis results in poor prognosis of this condition and death is inevitable. Advances in ultrasound and CT scans help for early diagnosis and have the potential to guide for appropriate management of this condition.

CONFLICTS OF INTEREST

The authors have no potential conflicts of interest to disclose and are in agreement with the contents of the manuscript.

DATA AVAILABILITY STATEMENT

The data presented in this report is available from the corresponding author upon reasonable request.

FUNDING

This article did not receive specific funding.

REFERENCES

1. Gruenwald P. Rupture of liver and spleen in the newborn infant. *J Pediatr.* 1948;33(2):195–201.
2. Descamps CS, Cneude F, Hays S, et al. Early hypovolemic shock and abdominal distention due to neonatal splenic rupture: urgency of diagnosis and management. *Eur J Pediatr*. 2017;176(9):1245-1250. doi:10.1007/s00431-017-2968-y
3. Hui CM, Tsui KY (2002) Splenic rupture in a newborn. J Pediatr Surg 37:E3
4. Bickler S, Ramachandran V, Gittes G K, Alonso M, Snyder C L. Nonoperative management of newborn splenic injury: a case report. *J Pediatr Surg.* 2000;35(3):500–501.
5. Lewis L, Sanoj K, Poojari G, Kamath PS. Neonate subcapsular splenic hematoma. *Indian J Pediatr.* (2008) 75:950–2. 10.1007/s12098-008-0199-y
6. Rothenberger D A, Horrigan T P, Sturm J T. Neonatal death following in utero traumatic splenic rupture. *J Pediatr Surg.* 1981;16(5):754–755.
7. Acar K, Cinbis M. A Neonatal Death Due to Rupture of the Normal Spleen. *Int J Pediatr Neonatol.* 2000;2(1):4928.
8. Tiboni S, Abdulmajid U, Pooboni S, Wighton C, Eradi B, Dagash H. Spontaneous Splenic Hemorrhage in the Newborn. *European J Pediatr Surg Rep*. 2015;3(2):71-73. doi:10.1055/s-0035-1564610
9. Blaivas M, Quinn J: Diagnosis of spontaneous splenic rupture with emergency ultrasonography. Ann Emerg Med 32:627-30, 1998
10. Williams RA, Black JJ, Sinow RM, Wilson ES. Computed tomography-assisted management of splenic trauma. *Am J Surg.* (1997) 174:276–9. 10.1016/S0002-9610(97)00135-9
11. Orloff M J, Peskin G W. Spontaneous rupture of the normal spleen; a surgical enigma. *Int Abstr Surg.* 1958;106(1):1–11.

FIGURE LEGEND:

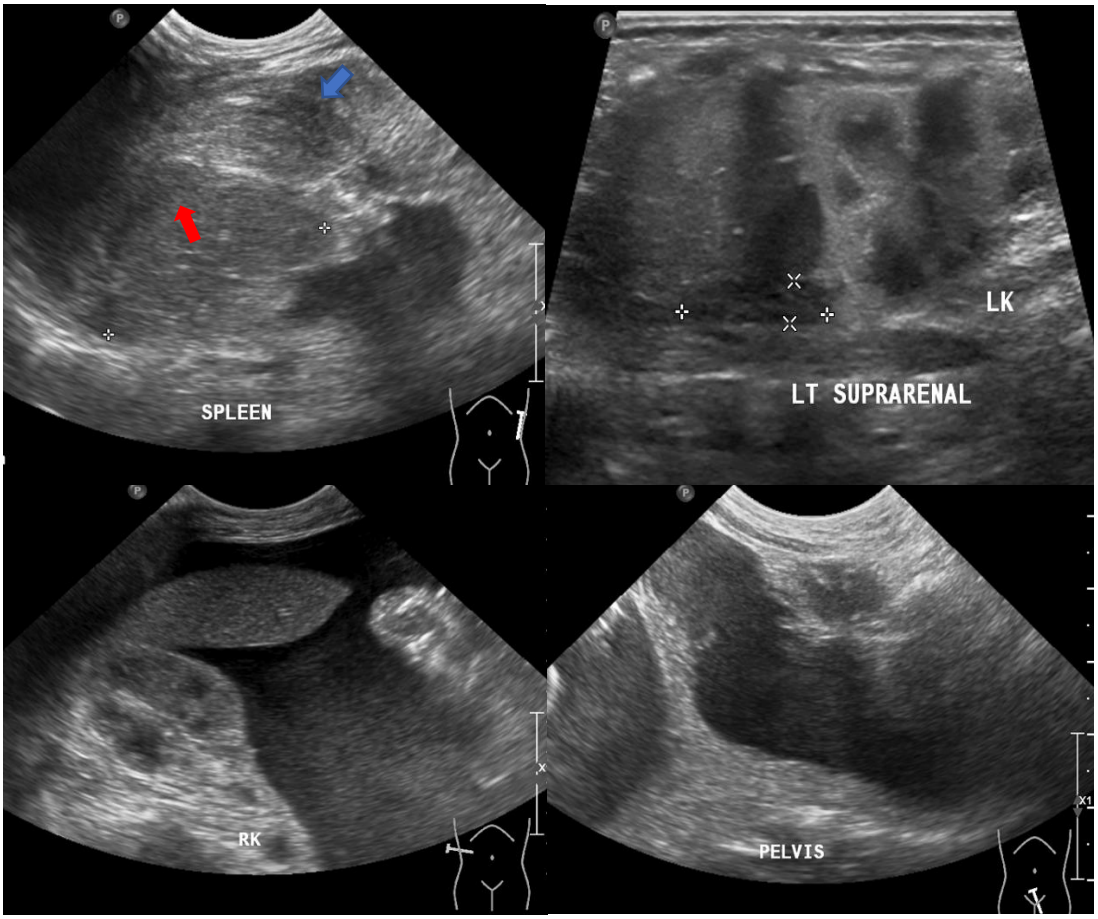

Figure 1: Abdominal ultrasound of the neonate demonstrates heterogeneous lesion/mass at the perisplenic region (blue arrow). The margin of the adjacent spleen is not well delineated (red arrow). It is associated with gross haemoperitoneum. The left adrenal gland is normal. These are in consistent with features of splenic haemorrhage.

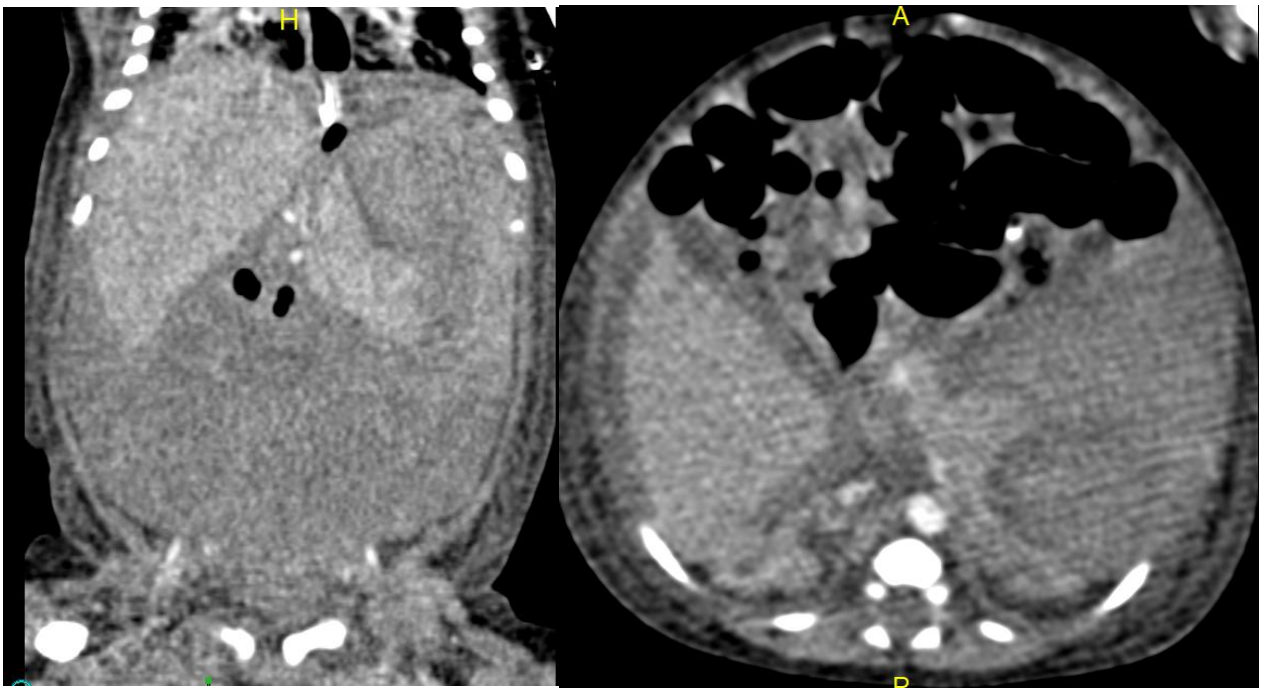

Figure 2: Coronal and axial CT abdomen of the neonate demonstrate an ill-defined hyperdense area at perisplenic region (*blue arrow*), likely represent perisplenic hematoma. Only part of the medial aspect of the spleen is observed (*red arrow*) with irregular margin of the lateral aspect of the spleen. Gross haemoperitoneum is observed. All these features likely represent splenic haemorrhage.