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Contents

Semimonthly Volume 8 Number 17 September 6, 2020

REVIEW

- 3621** Autoimmunity as the comet tail of COVID-19 pandemic
Talotta R, Robertson E
- 3645** Gender medicine: Lessons from COVID-19 and other medical conditions for designing health policy
Machluf Y, Chaïter Y, Tal O

MINIREVIEWS

- 3669** Complexities of diagnosis and management of COVID-19 in autoimmune diseases: Potential benefits and detriments of immunosuppression
Georgiev T, Angelov AK

ORIGINAL ARTICLE

Retrospective Study

- 3679** Incidental anal ¹⁸fluorodeoxyglucose uptake: Should we further examine the patient?
Moussaddaq AS, Brochard C, Palard-Novello X, Garin E, Wallenhorst T, Le Balc'h E, Merlini L'heritier A, Grainville T, Siproudhis L, Lièvre A
- 3691** Emergency surgery in COVID-19 outbreak: Has anything changed? Single center experience
D'Urbano F, Fabbri N, Koleva Radica M, Rossin E, Carcoforo P
- 3697** Somatostatin receptor scintigraphy in the follow up of neuroendocrine neoplasms of appendix
Saponjski J, Macut D, Sobic-Saranovic D, Ognjanovic S, Bozic Antic I, Pavlovic D, Artiko V
- 3708** Efficacy of stool multiplex polymerase chain reaction assay in adult patients with acute infectious diarrhea
Ahn JS, Seo SI, Kim J, Kim T, Kang JG, Kim HS, Shin WG, Jang MK, Kim HY
- 3718** Comparison of gemcitabine plus nab-paclitaxel and FOLFIRINOX in metastatic pancreatic cancer
Han SY, Kim DU, Seol YM, Kim S, Lee NK, Hong SB, Seo HI
- 3730** Shear wave elastography may be sensitive and more precise than transient elastography in predicting significant fibrosis
Yao TT, Pan J, Qian JD, Cheng H, Wang Y, Wang GQ
- 3743** Radioactive ¹²⁵I seed implantation for locally advanced pancreatic cancer: A retrospective analysis of 50 cases
Li CG, Zhou ZP, Jia YZ, Tan XL, Song YY
- 3751** Active surveillance in metastatic pancreatic neuroendocrine tumors: A 20-year single-institutional experience
Gao HL, Wang WQ, Xu HX, Wu CT, Li H, Ni QX, Yu XJ, Liu L

- 3763** Clinical efficacy of tocilizumab treatment in severe and critical COVID-19 patients

Zeng J, Xie MH, Yang J, Chao SW, Xu EL

- 3774** Phosphatidylinositol-3,4,5-trisphosphate dependent Rac exchange factor 1 is a diagnostic and prognostic biomarker for hepatocellular carcinoma

Cai Y, Zheng Q, Yao DJ

Observational Study

- 3786** Awareness and attitude of fecal microbiota transplantation through transendoscopic enteral tubing among inflammatory bowel disease patients

Zhong M, Sun Y, Wang HG, Marcella C, Cui BT, Miao YL, Zhang FM

CASE REPORT

- 3797** Cauda equina arachnoiditis – a rare manifestation of West Nile virus neuroinvasive disease: A case report

Santini M, Zupetic I, Viskovic K, Krznaric J, Kutlesa M, Krajinovic V, Polak VL, Savic V, Tabain I, Barbic L, Bogdanic M, Stevanovic V, Mrzljak A, Vilibic-Cavlek T

- 3804** Portal gas in neonates; is it always surgical? A case report

Altokhais TI

- 3808** Large lingual heterotopic gastrointestinal cyst in a newborn: A case report

Lee AD, Harada K, Tanaka S, Yokota Y, Mima T, Enomoto A, Kogo M

- 3814** Osteochondral lesion of talus with gout tophi deposition: A case report

Kim T, Choi YR

- 3821** Traumatic neuroma of remnant cystic duct mimicking duodenal subepithelial tumor: A case report

Kim DH, Park JH, Cho JK, Yang JW, Kim TH, Jeong SH, Kim YH, Lee YJ, Hong SC, Jung EJ, Ju YT, Jeong CY, Kim JY

- 3828** Autoimmune hepatitis in a patient with immunoglobulin A nephropathy: A case report

Jeon YH, Kim DW, Lee SJ, Park YJ, Kim HJ, Han M, Kim IY, Lee DW, Song SH, Lee SB, Seong EY

- 3835** Diagnosis of an actively bleeding brachial artery hematoma by contrast-enhanced ultrasound: A case report

Ma JJ, Zhang B

- 3841** Lung adenocarcinoma harboring rare epidermal growth factor receptor L858R and V834L mutations treated with icotinib: A case report

Zhai SS, Yu H, Gu TT, Li YX, Lei Y, Zhang HY, Zhen TH, Gao YG

- 3847** Gastroduodenitis associated with ulcerative colitis: A case report

Yang Y, Li CQ, Chen WJ, Ma ZH, Liu G

- 3853** Majocchi's granuloma caused by *Trichophyton rubrum* after facial injection with hyaluronic acid: A case report

Liu J, Xin WQ, Liu LT, Chen CF, Wu L, Hu XP

- 3859** Novel deletion mutation in Bruton's tyrosine kinase results in X-linked agammaglobulinemia: A case report
Hu XM, Yuan K, Chen H, Chen C, Fang YL, Zhu JF, Liang L, Wang CL
- 3867** Multidisciplinary treatment of life-threatening hemoptysis and paraplegia of choriocarcinoma with pulmonary, hepatic and spinal metastases: A case report
Lin YY, Sun Y, Jiang Y, Song BZ, Ke LJ
- 3875** Diagnostic value of ultrasound in the spontaneous rupture of renal angiomyolipoma during pregnancy: A case report
Zhang T, Xue S, Wang ZM, Duan XM, Wang DX
- 3881** Gallbladder sarcomatoid carcinoma: Seven case reports
Qin Q, Liu M, Wang X
- 3890** Surgical strategy used in multilevel cervical disc replacement and cervical hybrid surgery: Four case reports
Wang XF, Meng Y, Liu H, Hong Y, Wang BY
- 3903** Diagnosis and treatment of an elderly patient with 2019-nCoV pneumonia and acute exacerbation of chronic obstructive pulmonary disease in Gansu Province: A case report
He TP, Wang DL, Zhao J, Jiang XY, He J, Feng JK, Yuan Y
- 3911** Diagnosis and treatment of mixed infection of hepatic cystic and alveolar *echinococcosis*: Four case reports
A JD, Chai JP, Wang H, Gao W, Peng Z, Zhao SY, A XR

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The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

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Portal gas in neonates; is it always surgical? A case report

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Abstract

BACKGROUND

Hepatic portal venous gas in infants is frequently due to late presentation of necrotizing enterocolitis which is considered a relative indicator for surgical intervention.

CASE SUMMARY

A preterm baby underwent an umbilical catheter placement and discovered in abdominal radiograph to have air in the portal venous system due to malpositioning of the umbilical catheter.

CONCLUSION

Hepatic portal venous gas in infants without signs of necrotizing enterocolitis could result from malposition of umbilical venous catheter, and in that case, should be managed medically, with no need for surgical intervention.

Key words: Portal gas; Neonate; Necrotizing; Enterocolitis; Umbilical; Case report; Catheter

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Core tip: This is a case report of a rare case of a preterm baby with air in the portal venous system due to malpositioning of an umbilical catheter rather than necrotizing enterocolitis. Air in the portal venous system is very important in neonates, as it represents a late sign of necrotizing enterocolitis, and it is considered a relative indicator for surgical intervention. The aim of this case report is to deliver a message to pediatric surgeons and neonatologists to be aware of this finding and not to rush for surgical intervention.

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INTRODUCTION

Air in the portal venous system is very important in neonates, as it represents a late sign of necrotizing enterocolitis (NEC), and it is considered a relative indicator for surgical intervention^[1,2]. We report here a rare case of a preterm baby with air in the portal venous system due to malpositioning of an umbilical catheter rather than NEC.

CASE PRESENTATION

Chief complaints

A female neonate, with a post menstrual age of 27 wk and chronological age of 12 d, one of triplets and a product of *in vitro* fertilization, with a birth weight of 850 g, was referred for surgery as a case of NEC after observing air in the portal venous system.

History of present illness

The neonate was delivered and shifted to the neonatal care unit for management. She underwent umbilical catheter insertion. There were neither clinical nor radiological signs of NEC.

History of past illness

No remarkable past medical or surgical history.

Physical examination

The patient appeared clinically well, showing normal activity, and was tolerating feeds. There was no abdominal wall discoloration or distention.

Laboratory examinations

There was no evidence of acidosis. C reactive protein was 2, platelets count was 200000, and white blood cells count was 12000. Capillary Blood gas was normal (pH: 7.37, Bicarbonate: 22). Blood sugar was 90 mg/dL and blood culture was negative.

Imaging examinations

There was no air in the portal venous system before the insertion of umbilical catheter (Figure 1). But air in the portal venous system was noticed in the abdominal radiograph which was obtained to check the tip of the umbilical catheter (Figure 2). There was no pneumatosis intestinalis and bowel loops were not dilated. The umbilical catheter was removed, and the air in the portal venous system disappeared in the subsequent abdominal radiograph, which was performed after 24 h of adjustment (Figure 3).

FINAL DIAGNOSIS

The final diagnosis was an air in the portal venous system due to malpositioning of an umbilical catheter.

TREATMENT

The umbilical catheter was removed and air disappeared.

OUTCOME AND FOLLOW-UP

The infant remained stable with no complication. She was managed medically and discharged home when her weight reached 1.8 kg.

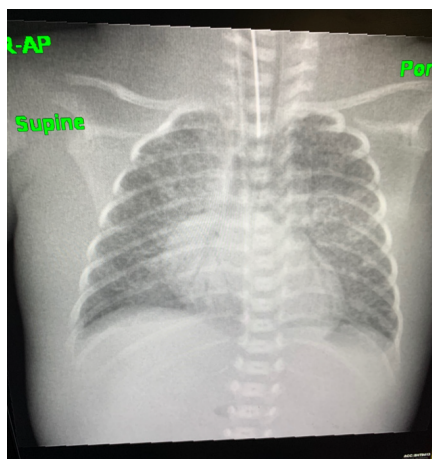


Figure 1 Abdominal radiograph before umbilical catheter insertion.

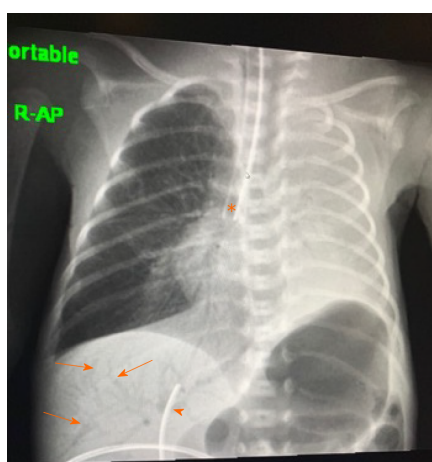


Figure 2 Abdominal radiograph showing portal gas (arrows) due to malposition of umbilical catheter (arrow head), and an incidental finding of right main bronchus intubation (asterisk) causing left sided atelectasis.

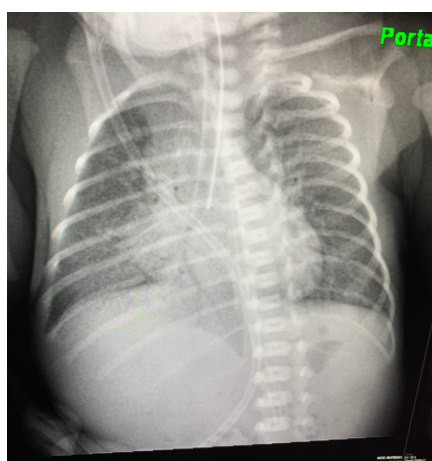


Figure 3 Abdominal radiograph after umbilical catheter removal.

DISCUSSION

Hepatic portal venous gas was first described by Wolfe *et al*^[3] in neonates in 1955. There are many underlying abdominal conditions associated with portal venous gas, ranging from benign to fatal conditions^[4]. When this finding is present with NEC, the infant is classified as at-risk with a high mortality rate (56%-90%) and might need surgical intervention^[1,5]. Our case had no clinical or radiological signs of NEC; thus, she was observed and did not require surgical intervention.

The hepatic portal gas noticed in our case was due to improper umbilical catheter placement. Umbilical vascular catheter placement in neonates was first reported in 1947^[6]. Although they are commonly used in the neonatal period, umbilical catheters are frequently malpositioned or associated with complications^[7]. If the catheter is malpositioned, there can be complications such as perforation into the peritoneal cavity, perforation into the urachus, hepatic laceration, displacement of the thrombus in the ductus venosus, pulmonary infarction, perforation into the pericardium, a retained catheter fragment, lung abscess, splenic vein thrombosis, and calcification of the portal vein or umbilical vein^[8].

Hepatic portal venous gas in radiography must be differentiated from gas in the biliary tree (pneumobilia). The classic radiological finding of portal venous gas is branching radiolucency following venous blood flow into the liver and extending to within 2 cm beneath the liver capsule. In contrast, pneumobilia is classically seen as central radiolucency following the biliary anatomy and not extending peripherally^[1,4].

CONCLUSION

Hepatic portal venous gas in infants without signs of NEC could result from malposition of Umbilical venous catheter, and in that case, should be managed medically, with no need for surgical intervention.

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