

CASE REPORT

Splenunculus mimicking splenomegaly in a patient with synchronous herpes simplex 1 viremia and myelosuppression

Dion A. Paul | Paul Bao Duy La | Joshua Haron Abasszade 

Department of General Medicine,
Monash Health, Clayton, Victoria,
Australia

Correspondence

Joshua Haron Abasszade, Department
of General Medicine, Monash Health,
246 Clayton Road, Clayton, Vic. 3168,
Australia.

Email: josh.abasszade@monash.edu

Abstract

Splenunculus, or congenital accessory spleen, is a benign anatomical variation, and is rarely of clinical consideration in routine clinical practice. We describe a patient who presented with synchronous herpes simplex 1 viraemia and myelosuppression, with a splenunculus mimicking splenomegaly, and we discuss the implications on clinical practice, investigations, and management.

KEYWORDS

case report, methotrexate toxicity, myelosuppression, splenomegaly, splenunculus, viremia

1 | INTRODUCTION

A splenunculus is a normal anatomical variant found commonly in the general population characterized by a non-palpable spleen.^{1,2} The presenting population are generally asymptomatic, and the diagnosis is made on incidental imaging.^{1,2} Current literature either presents wide varying estimates of the prevalence data or inconclusive epidemiological data on accessory spleens in the general population.³ However, a major systematic review exploring 81 studies pinpointed a prevalence rate of 14.5% with majority of them being in close proximity to the splenic hilum.³ Despite the benign nature of the condition, accessory spleens can often mimic sinister conditions ranging from colonic and renal malignancies to neuroendocrine tumors.⁴⁻⁶ Misdiagnosis can be disastrous as it can lead to inappropriate diagnostic pathways and management algorithms such as a splenectomy leading to neutropenia, causing great harm to the patient.¹⁻³

To the best of our knowledge, there is a dearth in the current literature of a splenunculus mimicking splenomegaly with concurrent HSV-1 viremia and myelosuppression,

and there are no known documented cases. We present a seldom seen and extremely rare case of a splenunculus masquerading as splenomegaly in a patient with myelosuppression and HSV-1 viremia whilst highlighting the importance of possessing a broad differential list and ensuring appropriate investigations are undertaken.

2 | CASE PRESENTATION

A 72-year-old female patient was referred by the general practitioner (GP) to a large metropolitan hospital with minimal oral intake not resolved by oral paracetamol and antifungal lozenges on the background of three days of severe mouth pain. The patient also reported three months of fatigue, new onset abdominal pain, sore throat, and an intermittent left upper quadrant (LUQ) lump that was reducible. She denied chest pain, shortness of breath, urinary and bowel symptoms. The patient was currently being treated for inflammatory osteoarthritis by the outpatient rheumatology team with hydroxychloroquine 400mg daily and prednisolone 5mg daily. Three weeks

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2022 The Authors. *Clinical Case Reports* published by John Wiley & Sons Ltd.

prior to admission, she was commenced on methotrexate 10mg weekly and folic acid 5mg daily excluding the day she was taking methotrexate. The patient confirmed she was compliant with all her medications.

On examination, she was febrile (temperature of 38.4°C) with a blood pressure of 137/68 mmHg, heart rate of 67 beats per minute, respiratory rate of 20 breaths per minute, and oxygen saturation of 94% on room air. Severe mucositis was noted around the mouth with white and erythematous lesions at back of throat and ulcers throughout. There was also a rash noted on the left ankle and multiple ulcers throughout the body which were not herpetic in nature. Cultures were obtained from an open lesion with slight ooze under the abdominal fat pads and the mouth. The abdominal examination demonstrated a tender LUQ with a palpable mass. Characterization of this abdominal mass on examination revealed that there was no palpable border, and it was not ballotable. The mass moved infero-medially with inspiration and was dull on percussion. There was no evidence of hepatomegaly, the patient was not jaundiced and there were no abnormal findings on cardio-respiratory examination.

Admission bloods revealed a pancytopenia with a depleted white cell count (WCC) of $2.5 \times 10^9/L$ (reference range: $4.0\text{--}11.0 \times 10^9/L$), neutropenia $1.00 \times 10^9/L$ (reference range: $2.00\text{--}8.00 \times 10^9/L$), thrombocytopenia $51 \times 10^9/L$ (reference range: $150\text{--}450 \times 10^9/L$), and anemia with a hemoglobin of 100 g/L (reference range: 125–175 g/L). The patient concurrently had a pre-renal acute kidney injury (AKI) with a downtrending eGFR of 30 ml/min (baseline eGFR was previously 67 ml/min) and an elevated creatinine of 147 $\mu\text{mol/L}$ (baseline creatinine of 77 $\mu\text{mol/L}$) likely due to pre-renal causes. Over the next two days, the WCC, neutrophils, platelets, and hemoglobin continued to downtrend to $1.1 \times 10^9/L$, $0.40 \times 10^9/L$, $26 \times 10^9/L$, and 93 g/L, respectively. This was further accompanied by the wound swab, mouth swab, and herpes

simplex virus (HSV) serum polymerase chain reaction (PCR) demonstrating a HSV infection (HSV type 1 DNA). Given the splenomegaly was accompanied by synchronous bone marrow myelosuppression and HSV viremia, a differential diagnosis of myelodysplastic syndrome (MDS) was considered. The hematology team were contacted to immediately transfer the patient to an associated tertiary center to perform a bone marrow aspiration and trephine (BMAT) to confirm the diagnosis. Whilst awaiting confirmation of a potential transfer, the vasculitis screen and malignancy blood screen were negative and a computerized tomography (CT) of the abdomen and pelvis without contrast was undertaken due to ongoing abdominal pain which revealed acute uncomplicated sigmoid diverticulitis and a normal spleen with a 36.89 mm \times 11.95 mm splenunculus attached to the splenic hilum (Figure 1). Prior to a potential BMAT, it was later revealed the GP had commenced a course of trimethoprim 300mg nocte, one week prior to admission due to a urinary tract infection whilst concurrently being on methotrexate. The patient was also reviewed by the acute surgical team and given the improvement in the abdominal pain over the next few days, opted for conservative management with an outpatient colonoscopy booked in six-eight weeks. The viremia was further complicated by a type 2 myocardial infarction with a mild troponin leak (initially 685 ng/L down-trending to 38 ng/L on discharge) and given she was already on aspirin 100mg and atorvastatin 80mg for a past history of a cerebrovascular accident, no further management was required on the advice from the cardiology team.

With a diagnosis of myelosuppression due to the idiosyncratic adverse effect of methotrexate toxicity secondary to co-administration of trimethoprim and HSV viraemia established, the patient did not require a BMAT, chemotherapy, or surgical management. Methotrexate and trimethoprim were immediately ceased, and she was given nine days of calcium folinate 15mg intravenous

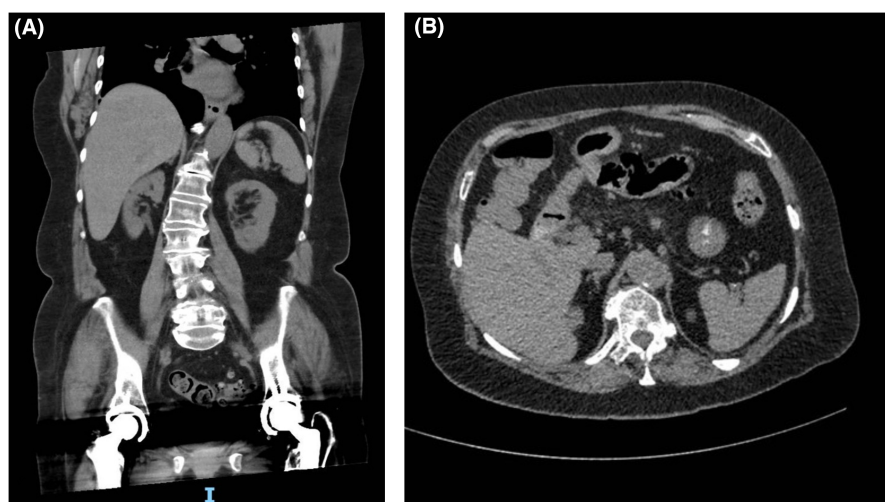


FIGURE 1 CT abdomen and pelvis without contrast (A: Coronal view, B: Axial thin slice) demonstrating evidence of 36.89 mm \times 11.95 mm splenunculus connected to the hilum of the spleen. CT, computerized tomography

(IV) solution six-hourly as rescue therapy. She was also managed with aggressive rehydration with IV fluids to correct the AKI. On the advice of the infectious diseases team, the patient was treated with eight days of IV acyclovir 800mg three times a day for the HSV-1 viraemia and piperacillin-tazobactam 4–0.5g six-hourly given she was febrile and neutropenic. The antibiotic therapy also provided coverage for the diverticulitis. Given her WCC and neutrophils were continuing to downtrend, she was given a single dose of 300µg of filgrastim (granulocyte-colony stimulating factor) which quickly improved her blood counts. As a result, the mucositis resolved, and the patient was able to tolerate oral intake. Over a period of 12 days, there was significant clinical improvement with stable inflammatory markers, restoration of baseline kidney function (eGFR 88 ml/min and creatinine 61 µmol/L) and normalization of her hemoglobin (110g/L), WCC ($7.3 \times 10^9/L$), neutrophils ($2.79 \times 10^9/L$), and platelets ($269 \times 10^9/L$). The full course of antiviral and antibiotic therapy was completed in hospital with no further community doses required. She was discharged with her regular home medications (except methotrexate and trimethoprim which were ceased) with plan to follow-up in the rheumatology clinic.

On review in the rheumatology clinic after one week, all of her symptoms had completely resolved and she requested the rheumatology team to recommence methotrexate as it significantly improved her inflammatory osteoarthritis. Unfortunately given the idiosyncratic adverse effect of methotrexate toxicity, it was deemed unsafe to recommence methotrexate and an alternative therapy is now being explored.

3 | DISCUSSION

Our case highlights the importance of having a broad differential list when organomegaly is noted on clinical examination, and whilst it is important to consider sinister diagnoses such as MDS, there are other potential etiologies for splenomegaly and pancytopenia. Multiple confounders were present in our case, such as a palpable spleen from a splenunculus, pancytopenia from concurrent use of methotrexate with trimethoprim, and HSV-1 viraemia due to immunosuppression. An open minded and patient-based approach is important in cases with multiple potential confounders to prevent unnecessary investigations and interventions.

A splenunculus, also known as an accessory spleen, supernumerary spleen, or splenule, is a normal anatomical variation from an incomplete fusion of mesenchymal buds during the fifth week of embryonic development resulting in a functional accessory spleen.⁷ It is a relatively common phenomena and estimates suggest a 10%–30% prevalence

in the population on autopsy^{7,8} and in 16% of patients who underwent contrast enhanced abdominal CT.⁸ Most accessory spleens are approximately 1 cm in size and thus not palpable,^{7,8} making our case comparatively large at 36.89 mm × 11.95 mm, which may explain why it was palpable on clinical examination. Splenunculi can be present as a single accessory spleen or can be multiple up to six.⁸ Most cases are observed in the splenic hilum (75%), and pancreatic tail (20%) but can occur anywhere intra-abdominally (5%) ranging from walls of the stomach or bowel, and even the pelvis or scrotum.^{7,8} The clinical significance of splenunculi is in patients with suspected or confirmed malignancy as it may be misinterpreted as metastatic lymph nodes, or in patients who have undergone a splenectomy as it would preserve splenic function (as splenunculi are effectively functional extra spleens).⁸ The preservation of splenic function is important to consider; in the case of a traumatic splenectomy, it can be beneficial to have preserved function in the remaining accessory spleen, whilst in cases of splenectomies for hypersplenism, a splenunculus would be detrimental. Our case highlights another potential clinical consideration with splenunculi as it may mimic splenomegaly, which becomes relevant in patients with concerns of MDS or those who are immunosuppressed. Whilst the use of CT scans, ultrasound and magnetic resonance imaging can be used to diagnose splenunculi,⁸ scintigraphy with 99-mTc-nanocolloid nuclear medicine scans are the most accurate in aiding non-invasive diagnosis as splenic tissue (including functionally active accessory splenic tissue such as a splenunculus) which will show uptake.^{7–9}

A splenunculus is often an incidental finding on the background of a separate clinical query made on abdominal CT imaging.^{1–3} Current management guidelines recommend no medical or surgical intervention unless the splenunculus is causing medical complications, otherwise only routine surveillance is required.³ Rarely, a splenunculus can also be found in conjunction with hereditary spherocytosis and in neutropenic patients.^{10,11} In fact, there has been a single case report documenting the recurrence of autoimmune neutropenia with the development of an accessory spleen.¹¹ This is crucial as the presence of splenomegaly on physical examination with an accompanying pancytopenia on full blood examination can lead even the astute clinicians to consider MDS, a group of hematological malignancies characterized by abnormal cell maturation, clonal hematopoiesis and one or more cytopenias.¹² MDS is managed depending on risk, severity and cytogenetics obtained from BMAT and treatment ranges from monitoring with supportive care (e.g. transfusion support) to chemotherapy and even allogeneic hematopoietic cell transplantation.¹² Fortunately, our patient was not subject to an unnecessary BMAT, chemotherapy, or surgical intervention

(which all have associated risks) and was fortunate that her splenunculus was picked up on CT imaging for a co-existing and unrelated medical ailment. Splenomegaly is also common in patients infected with HSV types 1 and 2, which is diagnosed on serum PCR or PCR of the lesion and treated with acyclovir.^{13,14}

It is noteworthy that a splenunculus is vastly asymptomatic and should not mimic physical examination findings of splenomegaly, which demonstrates the rarity of our case.^{1,2} Despite these factors, clinicians should consider a splenunculus as a cause for an abdominal mass in the LUQ which would require imaging to further characterize to avoid unnecessary medical and surgical management.

AUTHOR CONTRIBUTIONS

All authors have contributed to the manuscript in terms of concept, writing, and editing. JHA was primarily responsible for the concept and design and was part of the treating team. DAP, PBDL, and JHA were responsible for the draft of the manuscript. All authors were responsible for critical revision for important intellectual content and editing of the manuscript and have given final approval of the article for publication. All authors read and approved the final manuscript.

ACKNOWLEDGMENTS

None.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest in this study. Not previously presented.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

ORCID

Joshua Haron Abasszade  <https://orcid.org/0000-0001-5469-4317>

REFERENCES

1. Kar A, Kumar P, Samal S, Gaikwad MR. Splenunculus can mimic acute abdomen: its clinical and surgical relevance. *Int J Anat Res.* 2021;9(1.1):7861-7864.
2. Meyer-Rochow GY, Gifford AJ, Samra JS, Sywak MS. Intrapancreatic splenunculus. *Am J Surg.* 2007;194(1):75-76.
3. Vikse J, Sanna B, Henry BM, et al. The prevalence and morphometry of an accessory spleen: a meta-analysis and systematic review of 22,487 patients. *Int J Surg.* 2017;45:18-28.
4. Basu S, Ray AK, Banerjee S. Splenunculus masquerading as colonic malignancy. *Int Surg.* 2003;88(4):181-183.
5. Mohandas JT, Kumar AS, Ranganathan D, et al. Splenunculus masquerading as a neuroendocrine tumor of the pancreatic allograft in a kidney-pancreas recipient. *Transplantation.* 2013;96(8):e59-e62.
6. Froehner M, Leike S, Manseck A, Haase M, Wirth MP. Splenunculus mimicking late local recurrence of renal cell carcinoma. *Scand J Urol Nephrol.* 1998;32(6):418-419.
7. Bajwa SA, Kasi, A. Anatomy, abdomen and pelvis, accessory spleen. *StatPearls.* <https://www.ncbi.nlm.nih.gov/books/NBK519040/>. 2021.
8. Yildiz AE, Ariyurek MO, Karcaaltinacaba M. Splenic anomalies of shape, size and location: pictorial essay. *ScientificWorldJournal.* 2013;2013:321810.
9. d'Amico A, Cofalik A, Przeorek C, et al. Role of nuclear medicine imaging in differential diagnosis of accessory spleens in patients after splenectomy. *Pol J Radiol.* 2012;77(1):68-71.
10. Westerman MP, Jenkins JL, Bron KM. A splenunculus in hereditary spherocytosis. *Br J Haematol.* 1968;15(2):141-146.
11. Keidan AJ, Bareford D. Recurrence of neutropenia associated with splenunculus. *Clin Lab Haematol.* 1990;12(4):461-464.
12. Aster JC, Stone RM. Clinical manifestations and diagnosis of myelodysplastic syndromes (MDS). Up To Date. www.UpToDate.Com. Accessed September 18, 2020.
13. Whitley RJ, Roizman B. Herpes simplex virus infections. *Lancet.* 2001;357(9267):1513-1518.
14. Noor A, Panwala A, Forouhar F, Wu GY. Hepatitis caused by herpes viruses: a review. *J Dig Dis.* 2018;19(8):446-455.

How to cite this article: Paul DA, La PBD, Abasszade JH. Splenunculus mimicking splenomegaly in a patient with synchronous herpes simplex 1 viremia and myelosuppression. *Clin Case Rep.* 2022;10:e06616. doi: [10.1002/ccr3.6616](https://doi.org/10.1002/ccr3.6616)