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A Chronic Case of Hepatosplenomegaly in Elderly Diabetic Male

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Abstract

This case report presents the case of a 65 year-old male with a longstanding history of type 1 diabetes of 45 years duration. His diabetes was poorly controlled, as evidenced by the development of complications including hepatosplenomegaly and anemia. The patient presented with constitutional symptoms of fatigue, abdominal fullness and early satiety. His laboratory investigations revealed anemia with a hemoglobin of 11.5 gm% and a reduced red blood cell count. Ultrasonography showed hepatosplenomegaly with minimal ascites. A wide differential diagnosis for hepatosplenomegaly was considered, including infectious, hematological and autoimmune causes. However, in this patient with longstanding diabetes, the most likely etiology was diabetic microangiopathy leading to portal hypertension and congestion of the liver and spleen. Thorough diagnostic workup was performed to rule out other potential causes of hepatosplenomegaly. The management approach focused on improving glucose control to slow the progression of microvascular complications. Optimization of medications and lifestyle modifications were initiated. Monitoring for complications of portal hypertension such as variceal bleeding and ascites was instituted.

Keywords: Anemia, Diabetes Mellitus, Hepatosplenomegaly, Elderly, Anemia.

1. Introduction

Hepatosplenomegaly is a clinical condition characterized by the enlargement of both the liver and spleen. It can present with nonspecific symptoms such as abdominal fullness, early satiety and left upper quadrant discomfort (Baker, 2017). The underlying causes of hepatosplenomegaly are broad and include both malignancies and non-malignant conditions (Prasad et al., 1961). Common etiologies include infections, hematological disorders, autoimmune diseases and metabolic diseases. Type 1 diabetes is a chronic metabolic disease characterized by insulin deficiency and hyperglycemia. Poorly controlled diabetes over many years can lead to microvascular complications affecting small blood vessels throughout the body. Diabetic microangiopathy can involve the portal venous system supplying the liver and spleen, resulting in congestion, edema and enlargement of these organs (Zhang et al., 2018). This is a recognized cause of hepatosplenomegaly in patients with longstanding, poorly controlled type 1 diabetes.

The prevalence of hepatosplenomegaly in type 1 diabetes varies from 12-20% in different studies (Haymond and Berry Jr, 1954). The risk increases with age, duration of diabetes and poor glycemic control. While most cases of diabetic hepatosplenomegaly are mild and asymptomatic, some patients may present with early satiety, abdominal discomfort and constitutional symptoms as seen in the present case report. The main aim of this case report is to describe the case of an elderly diabetic male with hepatosplenomegaly and anemia and discuss the differential diagnoses, evaluation and management of this condition.

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2. Case Presentation

A 65-year-old male with a 45-year history of type 1 diabetes presented with complaints of fatigue, abdominal fullness and early satiety for 2 months. These constitutional symptoms developed gradually over weeks and were accompanied by loss of appetite.

On examination, he had hepatomegaly (enlarged liver palpable 4cm below the right costal margin) and splenomegaly (enlarged spleen palpable 5cm below the left costal margin). There were no stigmata of chronic liver disease such as jaundice, palmar erythema or spider angiomata. His laboratory investigations revealed a normocytic anemia with a hemoglobin of 11.5 gm%, hematocrit 36.6% and RBC count of 4.3 million cells/cu.mm. The platelet count was mildly elevated at 6.2 lakhs/cu.mm, likely due to hypersplenism.

Liver function tests showed mildly elevated transaminases with AST 56 units/L and ALT 72 units/L. Alkaline phosphatase and bilirubin levels were within normal limits. Prothrombin time and albumin levels were also normal. Ultrasonography of the abdomen confirmed hepatosplenomegaly with the liver measuring 18cm and spleen measuring 15cm in longitudinal axis (Figure 1). There was minimal ascites seen in the abdomen and pelvis. No focal lesions were noted in the liver or spleen on ultrasound.

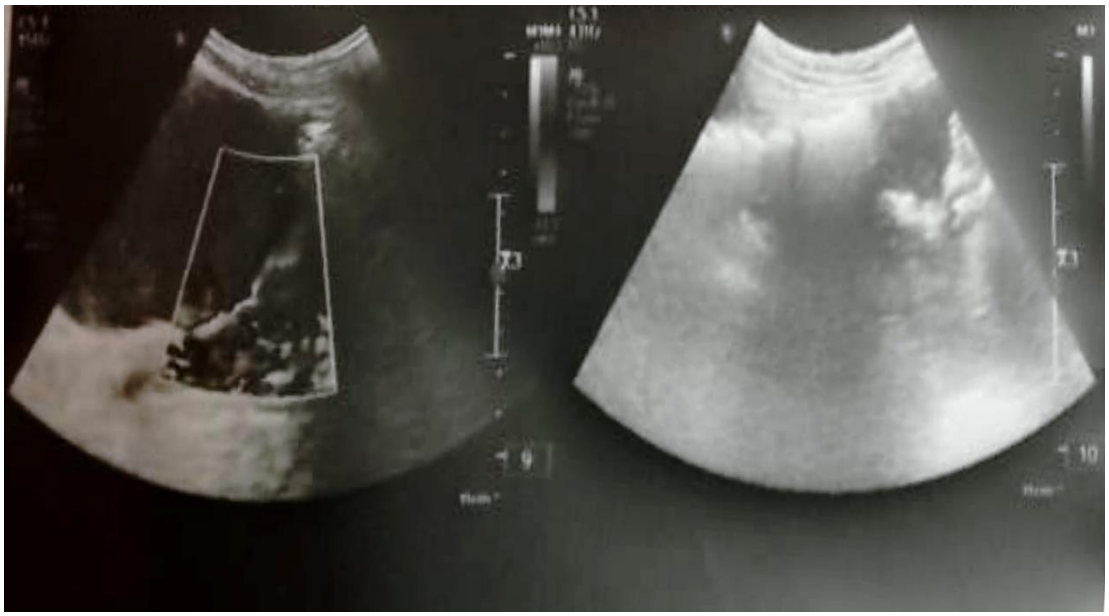

Figure 1: Ultrasonogram showing hepatosplenomegaly

3. Pathogenesis

In patients with longstanding, poorly controlled type 1 diabetes, hyperglycemia can result in microvascular complications known as diabetic microangiopathy. This involves damage to the small blood vessels including arterioles, capillaries and venules. Over time, diabetic microangiopathy can affect the portal venous system that drains blood from the abdominal organs into the liver. This results in narrowing and obstruction of the small portal venules. The obstruction of blood flow within the portal venous system leads to portal hypertension, which is defined as a portal venous pressure gradient above 5 mmHg. Portal hypertension subsequently causes congestion and edema within the liver and spleen, resulting in enlargement of these organs and clinically evident hepatosplenomegaly (Prasad et al., 1961).

In this case report, the patient had a history of type 1 diabetes for 45 years, indicating poor control of his disease for many decades. This would place him at high risk for developing diabetic microangiopathy and its complications. The presentation of hepatosplenomegaly, anemia and mildly deranged liver enzymes in this patient, in the absence of other obvious etiologies, suggests that portal hypertension secondary to diabetic microangiopathy is the most likely underlying mechanism (Takai et al., 2013). The minimal ascites seen on

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ultrasound in this patient indicates that the degree of portal hypertension was mild at the time of presentation, though it may progress to clinically significant portal hypertension with complications if diabetes control remains suboptimal.

4. Differential Diagnosis

Infectious causes of hepatosplenomegaly that were considered in this case include:

• Viral hepatitis: Hepatitis B and C infections are common causes, especially chronic hepatitis. However, laboratory tests to detect viral hepatitis were negative in this patient (Griffiths and Rossini, 1975) (Gandhi and Khanna, 2004).
• Tuberculosis: Abdominal tuberculosis can involve the liver and spleen, causing organ enlargement. Blood tests and imaging were not suggestive of tuberculosis in this case (Kapoor, 1998).

Hematological disorders in the differential diagnosis (Jaffe et al., 1984) include:
• Lymphoma: Both Hodgkin's and non-Hodgkin's lymphoma can present with hepatosplenomegaly. However, there were no B symptoms, abnormal lymph nodes or cellular changes on blood smear to indicate lymphoma in this patient.
• Leukemia: Leukemic infiltration of the liver and spleen can cause hepatosplenomegaly, especially in acute leukemias. However, the blood counts were not suggestive of leukemia in this case.

Among the autoimmune conditions (Lebastchi et al., 2015)a r considered:
• Systemic lupus erythematosus (SLE): Hepatosplenomegaly is seen in up to 30% of SLE patients, usually due to vasculitis. However, there was no evidence of other organ involvement or autoimmune serologies to indicate SLE.
• Storage diseases like Gaucher's disease and glycogen storage disease were also on the initial differential diagnosis (Vom Dahl and Mengel, 2010). However, laboratory tests to diagnose these conditions were not suggestive in the current case. After thoroughly considering and ruling out these infectious, neoplastic and autoimmune causes, diabetic microangiopathy with resultant portal hypertension was determined to be the most likely etiology of hepatosplenomegaly in this elderly patient with longstanding type 1 diabetes.

5. Key Learnings from this case

The key learning points from this case are:

- Tight glucose control is paramount to preventing or slowing the progression of microvascular complications in diabetes, including diabetic microangiopathy. This involves achieving target HbA1c levels, optimizing anti-hyperglycemic medications and instituting lifestyle modifications.
- Optimal blood pressure control is also important, as uncontrolled hypertension can exacerbate diabetic microangiopathy and its sequelae. Antihypertensive medications should be initiated or optimized to achieve target blood pressure levels.
- Even in patients with longstanding diabetes, thorough evaluation is warranted to rule out other potential causes of hepatosplenomegaly, especially when presentation is atypical or complications develop. This may involve blood tests, imaging and biopsy in selected cases.
- Early identification and treatment of hepatosplenomegaly is important to prevent progression to end-stage liver disease. Monitoring for complications of portal hypertension such as variceal bleeding and ascites should be instituted.
- Patient education regarding the role of tight glucose control in preventing microvascular complications is vital. A collaborative approach involving the patient, family, diabetologist and primary care physician is recommended.
- Good communication and coordination of care between specialists is important in managing complex cases involving multiple organ systems, such as in this case of hepatosplenomegaly complicating longstanding diabetes. A multidisciplinary team approach often yields the best outcomes.

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- Despite optimal medical management, some patients with longstanding diabetic microangiopathy may continue to have disease progression resulting in end-organ damage. This emphasizes the importance of early and stringent control of diabetes and its risk factors.

6. Discussion

While diabetic microangiopathy was likely the primary cause of hepatosplenomegaly in this patient with longstanding type 1 diabetes, further workup was recommended to definitively rule out other potential etiologies.

Additional tests that could have been considered include:

• Serological tests for hepatitis B and C (Sarai et al., 1978)
• Blood tests for hematological malignancies like leukemia and lymphoma (Jaffe et al., 1984)
• Imaging studies like abdominal CT or MRI to identify focal lesions (Blendis et al., 1970)
• Liver biopsy to examine tissue morphology and exclude storage disorders (Kapoor, 1998)

The initial focus of management was on improving the patient's diabetic control. This included:

• Intensifying anti-hyperglycemic medications to achieve optimal glycated hemoglobin levels. Insulin dosages may have needed adjustment.(Mohan et al., 2003)
• Counseling the patient on lifestyle modifications like dietary changes and increased physical activity. (Bezerra et al., 2023)
• Optimizing blood pressure control with antihypertensive medications to reduce the burden on microvessels. (Gupta et al., 2017)
• Educating the patient on the importance of strict glucose monitoring and medication adherence.

Even if other causes of hepatosplenomegaly were definitively ruled out, the long-term management of this patient with diabetes-related complications would involve:

• Regular monitoring of liver enzymes, blood counts and spleen size on imaging to detect progression of disease. (Baker, 2017)
• Surveillance for complications of portal hypertension like variceal bleeding, ascites and spontaneous bacterial peritonitis.
• Timely referral to gastroenterology or hepatology specialists if complications develop.
• Ongoing diabetes self-management education and nutritional counseling.
• Consideration of metformin as an alternative to insulin, if indicated.

7. Conclusion

Early diagnosis and treatment of hepatosplenomegaly is crucial to prevent end-stage liver disease with complications like variceal bleeding, ascites and hepatic encephalopathy. Aggressive management at onset is necessary to slow deterioration. Tight glucose control is essential for diabetic patients with hepatosplenomegaly, achieved through lifestyle modifications, medication optimization and patient education. These measures can halt or even reverse hepatosplenomegaly and its complications. Close monitoring for complications and multidisciplinary care involving diabetologists, endocrinologists and hepatologists are essential for optimal outcomes.

References

[1] Baker, A., 2017. Hepatosplenomegaly. Paediatrics and Child Health 27, 247–249. https://doi.org/10.1016/j.paed.2017.02.005
[2] Bezerra, R.N., Falcao, L.T.M., Lavor, C., Kerstenetzky, M.S., 2023. Bardet-Biedl syndrome and hepatosplenomegaly: A case report of a rare presentation. J Clin Images Med Case Rep 4, 2256.
[3] Blendis, L.M., McNeilly, W.J., Sheppard, L., Williams, R., Laws, J.W., 1970. Observer variation in the clinical and radiological assessment of hepatosplenomegaly. Br Med J 1, 727–730. https://doi.org/10.1136/bmj.1.5698.727

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Impact Factor: 5.9

[4] Gandhi, M.K., Khanna, R., 2004. Human cytomegalovirus: clinical aspects, immune regulation, and emerging treatments. The Lancet infectious diseases 4, 725–738. https://doi.org/10.1016/S1473-3099(04)01202-2
[5] Griffiths, H.J., Rossini, A.A., 1975. A case of lipoatrophic diabetes. Radiology 114, 329–330. https://doi.org/10.1148/114.2.329
[6] Gupta, N., Asi, N., Farah, W., Almasri, J., Barrionuevo, P., Alsawas, M., Wang, Z., Haymond, M.W., Brown, R.J., Murad, M.H., 2017. Clinical features and management of non-HIV–related lipodystrophy in children: a systematic review. The Journal of Clinical Endocrinology & Metabolism 102, 363–374. https://doi.org/10.1210/jc.2016-2271
[7] HAYMOND, T.A., BERRY JR, K., 1954. Persistent hyperlipemia and hepatosplenomegaly in a patient with controlled diabetes mellitus. Annals of Internal Medicine 41, 609–616. https://doi.org/10.7326/0003-4819-41-3-609
[8] Jaffe, E.S., Blattner, W.A., Blayney, D.W., Bunn Jr, P.A., Cossman, J., Robert-Guroff, M., Gallo, R.C., 1984. The pathologic spectrum of adult T-cell leukemia/lymphoma in the United States. Human T-cell leukemia/lymphoma virus-associated lymphoid malignancies. The American journal of surgical pathology 8, 263–275. https://doi.org/10.1097/00000478-198404000-00003
[9] Kapoor, V.K., 1998. Abdominal tuberculosis. Postgraduate medical journal 74, 459–467. https://doi.org/10.1136/pgmj.74.874.459
[10] Lebastchi, J., Ajluni, N., Neidert, A., Oral, E.A., 2015. A report of three cases with acquired generalized lipodystrophy with distinct autoimmune conditions treated with metreleptin. The Journal of Clinical Endocrinology & Metabolism 100, 3967–3970. https://doi.org/10.1210/jc.2015-2589
[11] Mohan, A., Guleria, R., Samantaray, J.C., Dutta, A.K., Tandon, S., Pande, J.N., 2003. Uncommon cause of hepatosplenomegaly in an immunocompetent patient. Postgraduate Medical Journal 79, 478–478. https://doi.org/10.1136/pmj.79.934.478
[12] Prasad, A.S., Halsted, J.A., Nadimi, M., 1961. Syndrome of iron deficiency anemia, hepatosplenomegaly, hypogonadism, dwarfism and geophagia. The American journal of medicine 31, 532–546. https://doi.org/10.1016/0002-9343(61)90137-1
[13] Sarai, T., Kawanishi, K., Saito, Y., Aoi, K., Nishina, Y., Ofuji, T., 1978. Lipoatrophic diabetes. Report of a case. Acta Medica Okayama 32, 309–318.
[14] Takai, K., Nikkuni, K., Momoi, A., Nagai, K., Igarashi, N., Saeki, T., 2013. Thrombocytopenia with reticulin fibrosis accompanied by fever, anasarca and hepatosplenomegaly: a clinical report of five cases. Journal of clinical and experimental hematopathology 53, 63–68. https://doi.org/10.3960/jslrt.53.63
[15] Vom Dahl, S., Mengel, E., 2010. Lysosomal storage diseases as differential diagnosis of hepatosplenomegaly. Best practice & research Clinical gastroenterology 24, 619–628. https://doi.org/10.1016/j.bpg.2010.09.001
[16] Zhang, M., Li, X., Xi, L., Zhao, Z., Cheng, R., Wu, B., Luo, F., 2018. Diabetes Mellitus, Autoimmune Hemolytic Anemia, Hepatosplenomegaly and Lymphadenopathy: A Rare Association in Chinese Children. Diabetes 110, P3.

A Brief Author Biography

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