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# Oncological management dilemma: a rare presentation of hairy cell leukaemia with hepatic involvement presenting concomitantly with pancreatic adenocarcinoma

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## SUMMARY

Hairy cell leukaemia (HCL) is a rare B cell malignancy that is associated with the BRAF V600E mutation and has good treatment response to purine analogues. Its presentation synchronously with other malignancies has been rarely reported. Here, we present a patient with HCL with hepatic involvement who was also found to have pancreatic adenocarcinoma concomitantly at the time of diagnosis. Treating these rare cases simultaneously is a challenge clinically. Throughout this case study, we provide our approach on how oncological care teams provided care for this complicated and rare disease state.

## BACKGROUND

Hairy cell leukaemia (HCL) is a rare, chronic B-cell malignancy that affects primarily the bone marrow, spleen and the peripheral blood. Patients usually present with pancytopenia along with systemic symptoms such as fatigue and weight loss. Median age of diagnosis is 55 years of age and male patients are disproportionately more affected as compared with female patients with a ratio of 4:1.<sup>1</sup> Most cases are caused by V600E BRAF gene mutation of late activated memory B cells. Treatment is usually reserved for symptomatic patients who experience fatigue or symptomatic splenomegaly, and first-line treatment consists of the purine analogues of cladribine or pentostatin.<sup>1</sup>

Pancreatic cancer is the second most common gastrointestinal malignancy in the USA.<sup>2</sup> Patients usually present with worsening abdominal pain, weight loss, jaundice and lab results indicative of an obstructive process with an elevated bilirubin and liver function tests. These patients usually present late in the disease process and their malignancy is far too advanced to cure. The only curative treatment for pancreatic cancer is surgery, however, that only happens in roughly 15% of patients given the presentation of the disease is at its final stages where the tumour is no longer resectable.<sup>2</sup> Adjuvant and neoadjuvant chemotherapy such as FOLF-IRINOX (folinic acid, fluorouracil, irinotecan, oxaliplatin) or gemcitabine plus nab-paclitaxel or gemcitabine alone are typically used based on the patient's performance status.<sup>2</sup> Here, we present a patient in her 70s who presented to the emergency department for worsening fatigue and weight loss. She was found to have an elevated liver function

tests and bilirubin levels concerning for an obstructive process. Abdominal imaging showed multiple hepatic masses consistent with metastasis. Endoscopic ultrasound revealed a hilar mass, biopsy-confirmed pancreatic adenocarcinoma. However, a subsequent liver biopsy was performed which was positive for HCL infiltrates. This is a rare case of HCL with liver involvement in the setting of pancreatic adenocarcinoma.

## CASE PRESENTATION

We present a woman in her 70s with a medical history of insulin-dependent type 2 diabetes, hypertension, stage IIIA chronic kidney disease, diverticulosis and acid reflux disease who came to the emergency department in January 2022 with weakness, fatigue and a 6-month 20-pound weight loss. She was also found to be in diabetic ketoacidosis on admission and was COVID-19 positive. On admission, the patient was found to have a normocytic hypochromic anaemia of 8.4, a bilirubin of 1.9, an elevated alkaline phosphatase of 465, with an AST and ALT level of 42 and 30, respectively. Of note, her liver function tests and bilirubin level were normal 6 months prior to presentation. Blood cultures were found positive for gram negative bacteria consistent for *Escherichia coli*. Physical examination was consistent with mild splenomegaly. She was started on antibiotics with ceftriaxone and metronidazole with a gastroenterology consult.

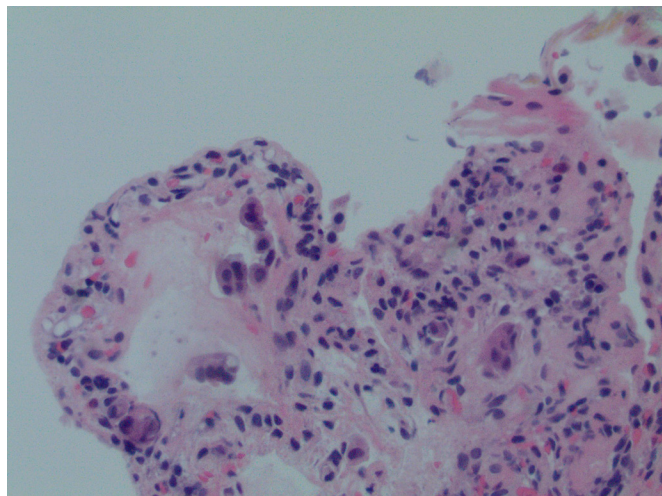
Due to the patient's weight loss, a CT scan of the abdomen and pelvis was obtained a couple of weeks prior to hospitalisation by her primary care physician showing non-specific diffuse moderate small bowel wall thickening involving the majority of jejunal and ileal loops as well as hyperdense 10mm cephalic hyperdense structure arising within the midpole of the left kidney, which may relate to a proteinaceous or haemorrhagic cyst. During her admission, repeat abdominal imaging with an MRI of the abdomen and pelvis showed pancreatic duct dilation up to 5 mm and common duct dilation along with a numerous T2 bright hypovascularised hepatic masses present with some of the masses being hyperintense in nature. These masses are new when compared with the previous CT scan.

Given the pancreatic duct dilation, gastroenterology proceeded with oesophagogastroduodenoscopy, which showed a malignant duodenal ampullary mass with intermittent spontaneous



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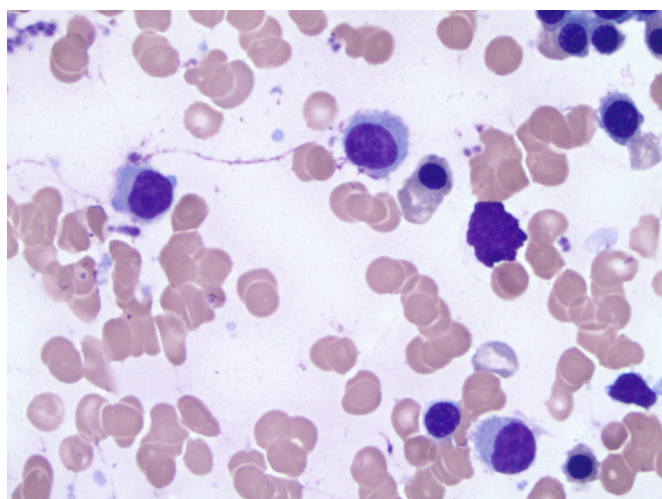
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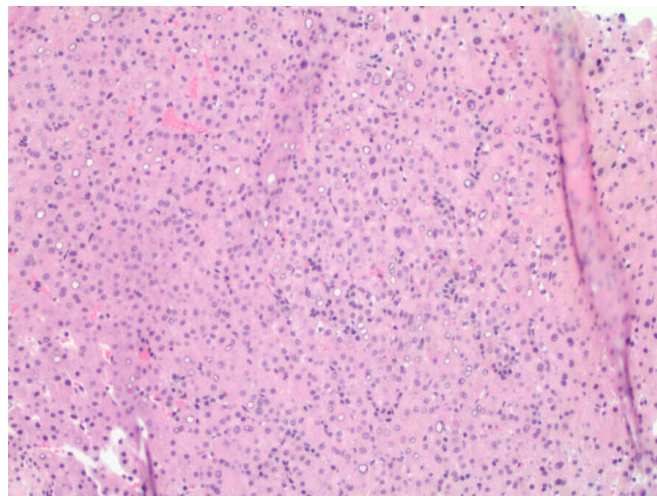
**Figure 1** Ampullary biopsy showing adenocarcinoma.

oozing. This was followed by an endoscopic ultrasound was then done, and it showed a mass in the ampulla extending beyond the duodenal wall on to the pancreatic head with dilation of the main bile duct up to 15 mm and pancreatic duct dilation up to 7 mm. A biopsy of the mass showed malignant cells that were suspicious for adenocarcinoma from a pancreatic primary (figure 1).

Given the patient's pancytopenia with a haemoglobin of 8.4, white cell count of 3.9 and a platelet count of 140K, a peripheral smear was obtained. Peripheral smear showed pancytopenia with monocytopenia and lymphopenia as well as occasional atypical lymphocytes with reniform nuclei, spongy grey-blue cytoplasm and hairy-like protrusions resembling hairy cells. Concurrent flow cytometry shows a population of CD5-negative/CD10-negative monotypic B-cells with immunophenotype suspicious for HCL. This necessitated a haematology consult. The haematology service arranged for a bone marrow aspirate/biopsy (figure 2) as well as molecular testing of the BRAF-V600E mutation to confirm the diagnosis. The patient was found to be BRAF-V600E positive. At that time, the patient was feeling better symptomatically and was cleared for discharge with urgent follow-up in the outpatient setting.



**Figure 2** Bone marrow biopsy showing evidence of hairy cell leukaemia. details of immunophenotype as described.



**Figure 3** Liver biopsy H&E staining showing benign liver parenchyma with sinusoidal lymphocytic infiltrate and cholestasis. In addition, there is focal fibrosis.

The bright CD45+ cells with small-to-large lymphoid light scatter are analysed by flow cytometry. These are a mixture of mature T-lymphocytes and monotypic B-lymphocytes. The latter show the following composite antigen profile:

Positive: CD11c (bright), CD19 (bright), CD20 (bright), CD22, CD25, CD103 (subset), CD200 and immunoglobulin lambda light chain (bright).

Negative: CD3, CD5, CD10, CD23, CD38, CD123 and immunoglobulin kappa light chain. The above antigen profile is positive for a CD5 negative/CD10 negative B-cell lymphoproliferative disorder (LPD), with immunophenotype suggestive of HCL.

#### Immunostains

The atypical lymphoid cells are positive for CD20 and CyclinD1, comprising ~70% of marrow cellularity. CD3 highlights scattered and clusters of T-cells in the background.

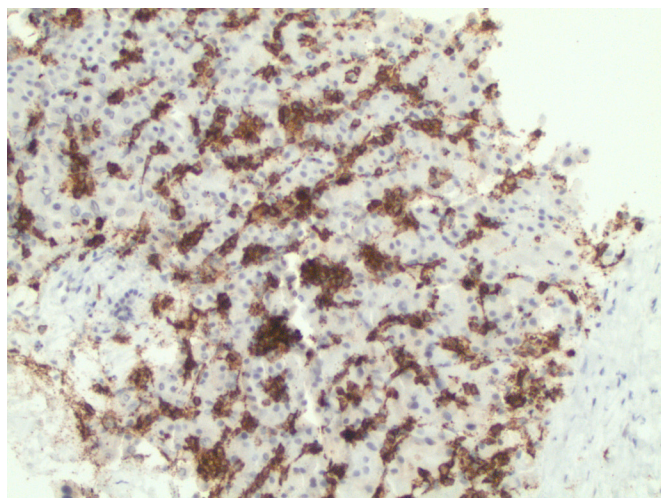
In the outpatient setting, a liver biopsy (figure 3) was obtained to facilitate pancreatic cancer staging given the multiple hepatic masses. The biopsy results were consistent with HCL (figure 4). IGH gene rearrangement analysis was positive for clonality and demonstrated a similar clone to that detected in the recent bone marrow biopsy; therefore, consistent with involvement by HCL.

Her pancreatic cancer was hence staged according to the eighth edition of AJCC at stage IB. She was presented at the pancreatic multidisciplinary tumour board meeting as well as malignant haematology tumour board meeting for discussion.

#### TREATMENT

Given that the patient had two primary malignancies that needed to be treated, the management was a little tricky. The consensus as per medical oncology and haematology was to initially treat the patient's HCL with rituximab with goal to put the patient into remission and then proceed with further management of her pancreatic adenocarcinoma, whether surgical, radiation or systemic therapy. We chose to treat the patient this way because more than 70% of her bone marrow was involved with HCL and she had significant pancytopenia that would have put her at increased risk of myelotoxicity from pancreatic cancer chemotherapy regimens (whether treated as neoadjuvant or definitive). Moreover, prolonged immunosuppression was anticipated if we





**Figure 4** Liver biopsy with CD20 staining showing evidence of hairy cell leukaemia involvement in the liver. IGH gene rearrangement analysis was positive for clonality and demonstrated a similar clone to that detected in the recent bone marrow biopsy; therefore, consistent with involvement by hairy cell leukaemia

chose to treat her HCL with cladribine, which could have further complicated pancreatic cancer management. The prolonged state of immunosuppression with cladribine as opposed to rituximab would have made her more of a poor surgical candidate in terms of her pancreatic cancer. Unfortunately, the patient only received three out of four infusions of rituximab before passing away from a pulmonary embolus.

## DISCUSSION

HCL is a rare and indolent LPD that is known for its late relapses. Some patients could be observed without the need for treatment. Treatment is needed when patients begin to experience symptoms usually from their pancytopenia. First-line treatment is usually with the purine analogues of cladribine or pentostatin.

What happens when there are two primary malignancies that present at the same time? Which malignancy does the care team treat for first? Here, we present a patient who presented with two primary malignancies at the same time. The patient presented for progressive weight loss and pancytopenia as well as biliary duct dilation. Her workup showed a hepatic and an ampullary mass that was found to be pancreatic adenocarcinoma. Given this picture, we initially believed the patient might have had metastatic pancreatic cancer but while working up the pancytopenia, the patient was also found to have HCL. Biopsy of the live mass was taken, and it was consistent with HCL and not pancreatic adenocarcinoma.

A case report reported by Acebo *et al* examined a patient that presented with papillary cystic tumour of the pancreas with coexisting HCL.<sup>5</sup> The patient in this case report was diagnosed with HCL and then 7 months later was found to have papillary cystic tumour of the pancreas. After going through a thorough literature review, they found no association between the two cancers and treatment consisted of tumour resection, followed by treatment for HCL with purine analogues. The patient was treated adequately and made a good recovery.

This was not the first-time HCL presented as a liver mass. Another case report done by Al-Za'abi *et al* described a case of a 70-year-old patient who presented with anaemia and a peripheral smear showed neoplastic cells with eccentric bland

nucelli an irregular cytoplasmic membrane characterised by fine filamentous projections that goes in line with a diagnosis of HCL.<sup>4</sup> A CT scan at the time showed a 3 cm liver mass. A need core biopsy was done and showed neoplastic cells characterised by the same cells as described as above. The cells were CD20+but CD5 and CD 10 negative. This was an interesting case of HCL presenting as a liver mass. Sahar *et al* also wrote a case report about a patient who presented with a liver mass and was found to have metastatic HCL.<sup>5</sup> The patient in this case was treated with cladribine and had a good response.

The most interesting aspect of our case, however, is deciding how to treat our patient. At one end, the patient has HCL that can be well controlled with a favourable outcome but on the other hand, she is also diagnosed with early-stage pancreatic adenocarcinoma. Given her symptomatic presentation and cytopenia, we decided to treat her HCL first, improve her cytopenia and then restage her pancreatic cancer and decide if she would be a candidate for surgery. Giving the patient standard of care regimen for HCL might have delayed her pancreatic cancer treatment. Hence, we decided to treat her with rituximab first, then address the pancreatic cancer. Depending on her clinical course afterwards, a purine analogue was to be offered for definitive treatment of HCL.

The dilemma of the entire patient case was regarding the therapeutic choice for treatment. The primary goal was to treat the patient's pancreatic carcinoma but due to her severe cytopenia due to the patient's underlying HCL, we chose to treat her HCL in hopes her cytopenia will recover to the point where she can undergo treatment for her pancreatic malignancy. As presented in the article, there are a couple of different regimens one can choose from to treat HCL, but we chose to treat her with rituximab as we figured this will make her the least immunocompromised compared with other treatments such as cladribine or pentostatin.

An article written by Naik and Saven explained when providers should initiate therapy for HCL. They stated, patients should receive some form of therapy when such patient is symptomatic or when patients have a haemoglobin under 10 g/dL, platelets less than  $100 \times 10^9/L$  and/or neutrophils less than  $1.0 \times 10^9/L$ .<sup>6</sup> In our patient's case, she has a haemoglobin of 8.4 g/dL and we attributed this to her underlying HCL. We also anticipated, that if we chose to treat her for her underlying pancreatic adenocarcinoma first, her haemoglobin will drop even further requiring her to get support red blood cell transfusions.

Another article by Troussard and Grever looked at different treatment options for patients with HCL. Usually, like most of the literature suggests, first line therapy would be a purine analogue such as cladribine or pentostatin, but if patients have relapse with this therapy and their cancer cells express CD20, like the patient in this case report, then rituximab can be an option.<sup>7</sup>

To our knowledge, this is the first time a patient presented with HCL and synchronous pancreatic adenocarcinoma. A relatively similar case was presented by Salemis *et al* where the team was discovered neuroendocrine colon carcinoma and HCL.<sup>8</sup> In that case, they presented a 69-year-old man who had bright red rectal bleeding and colonoscopy showed a bleeding ulcerative mass that was biopsied and showed poorly differentiated carcinoma with histology showing a poorly differentiated neuroendocrine carcinoma. The patient was also pancytopenic on presentation and bone marrow biopsy revealed extensive infiltration by a malignant LPD of B cell origin and further analysis confirmed HCL. The treatment for this patient was interesting. The team chose to start chemotherapy for HCL with pentostatin due to

## Case report

the patient's pancytopenia and then adjuvant chemotherapy for the neuroendocrine colon carcinoma with FOLFOX and Rituximab regimen. This was started 4 months after treatment with pentostatin. The team chose to do this so the patient can tolerate the haematological side effects of systemic chemotherapy. The patient did tolerate this chemotherapy regimen well but unfortunately had hepatic metastases 10 months after treatment.

In conclusion, we present a rare case of HCL that presented concomitantly with stage IB pancreatic carcinoma. To our knowledge, this is the first reported case of these two malignancies presenting together. HCL and pancreatic cancer individually are relatively uncommon, so it is extremely unlikely for these two malignancies to present simultaneously. Most important question is, which malignancy do clinicians treat first and how to tailor therapy so that complications of treating one cancer does not affect treating the other malignancy.

### Learning points

- ▶ When treating for two malignancies presenting simultaneously, it is best to treat the malignancy that is more symptomatic, but keeping in mind the side effects of such treatment.
- ▶ Try to use therapy that minimises immunosuppression so patients can undergo treatment for the other malignancy while minimising complications.
- ▶ More cases like these need to be presented for healthcare teams to understand how to manage two malignancies (solid and haematological) at the same time.

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**Contributors** ZIA-S has contributed in writing this case report along with BB and TB. BB and ZIA-S have treated the patient mentioned in the case report and would like to publish our experience with this patient encounter as it was a rare disease type with specific management implications. TB helped with literature review and writing the manuscript.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

### REFERENCES

- 1 Kreitman RJ. Hairy cell leukemia: present and future directions. *Leuk Lymphoma* 2019;60:2869–79.
- 2 Klein AP. Pancreatic cancer epidemiology: understanding the role of lifestyle and inherited risk factors. *Nat Rev Gastroenterol Hepatol* 2021;18:493–502.
- 3 Acebo E, Rodilla IG, Torio B, et al. Papillary cystic tumor of the pancreas coexisting with hairy cell leukemia. *Pathology* 2000;32:216–9.
- 4 Al-Za'abi AM, Boerner SL, Geddie W. Hairy cell leukemia presenting as a discrete liver mass: diagnosis by fine needle aspiration biopsy. *Diagn Cytopathol* 2008;36:128–32.
- 5 Sahar N, Schiby G, Davidson T, et al. Hairy cell leukemia presenting as multiple discrete hepatic lesions. *World J Gastroenterol* 2009;15:4453.
- 6 Naik RR, Saven A. My treatment approach to hairy cell leukemia. *Mayo Clin Proc* 2012;87:67–76.
- 7 Troussard X, Grever MR. The revised guidelines for the diagnosis and management of hairy cell leukaemia and the hairy cell leukaemia variant. *Br J Haematol* 2021;193:11–14.
- 8 Salemis NS, Pinielis D, Tsiambas E, et al. Synchronous occurrence of neuroendocrine colon carcinoma and hairy cell leukemia. *J Gastrointest Cancer* 2011;42:131–6.

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