

# Biliary Necrosis in Liver Lymphoma

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## ABSTRACT

Hepatic lymphoma is a rare condition. Biliary complication such as biliary necrosis is a potential treatment complication. We present a case where a patient with hepatic lymphoma encountered biliary necrosis after combination therapy.

A 77-year-old Chinese male with biopsy proven diffuse large B cell lymphoma was treated with chemotherapy and radiation therapy (RT). He received intensity-modulated radiation therapy (IMRT) of 30.6 Gy/18 fractions to prechemotherapy volume, and 39.6 Gy/18 fractions to the post chemotherapy residual tumor, using concomitant boost technique. He was later found to have possible biliary necrosis on computed tomography scan. This was later confirmed during an intra-operative cholangiogram done for a percutaneous transhepatic biliary drainage procedure.

This case report demonstrates a rare case of biliary necrosis, possibly related to the natural history of tumor necrosis and treatment (combination therapy), in a patient with hepatic lymphoma.

## CASE REPORT

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#### Background

Hepatic lymphoma is a rare condition. The majority of patients present with vague, non-specific symptoms such as nausea, vomiting, abdominal discomfort, and jaundice [1]. Varying degrees of hepatomegaly may also be present [2]. Due to the low incidence with characteristically vague symptoms at the outset, patients with hepatic lymphoma often undergo extensive investigations before reaching up a definitive diagnosis [3]. Diagnosis of hepatic lymphoma depends on histological confirmation.

There is little consistency in the literature regarding the treatment of hepatic lymphoma. The current literature regarding treatment and tumor response are derived from case series. Biliary complications, such as bile-duct stricture, necrosis, and/or cholangitis, are potential complications of radiation therapy (RT) [4, 5]. Radiation-induced biliary complications were reported in early studies on the use of external-beam RT, and were thought to result from injury to the ductal cells and microvessels, leading to progressive microvasculitis and hypoxia. Biliary complications following external RT are not common. In this case study, we present a case where a patient with hepatic lymphoma encountered biliary necrosis after combination therapy. This report fulfils our institution's criteria for ethics board waiver.

#### Case Presentation

A 77-year-old Chinese male presents with persistent pruritus that was out-of-proportion to rash, along with a drop to haemoglobin levels. A malignancy screen with computed tomography (CT) thorax, abdomen and pelvis revealed a suspicious tumor in the liver with periportal extension. A positron emission tomography scan demonstrated fluorodeoxyglucose (FDG) avidity of the known hepatic mass, with another FDG avid lesion seen in the right acetabulum. After biopsy, the patient was diagnosed with diffuse large B cell lymphoma.

The patient had a combination of chemotherapy and radiation therapy. He has undergone R-CEOP (Rituximab, Cyclophosphamide, Etoposide, Vincristine and Prednisolone) for 6 cycles, intrathecal methotrexate for 4 cycles, as well as R-GEMOX (Rituximab, Gemcitabine and Oxaliplatin) for 4 cycles. The patient underwent intensity-modulated radiation therapy (IMRT) of 30.6 Gy/18 fractions to prechemotherapy volume, and 39.6 Gy/18 fractions to the post chemotherapy residual tumor, using concomitant boost technique.

The patient was later found to have significantly deranged liver function tests (LFTs), which showed an obstructive pattern of disease. Contrast enhanced CT of the abdomen and pelvis (Figure 1) revealed possible biliary necrosis. In the same scan, it was also revealed that there was biloma formation with cholangitic abscesses. The patient then underwent a

percutaneous transhepatic biliary drainage procedure, and intraoperative cholangiogram confirmed disruption of the right-sided intra-hepatic ducts, compatible with biliary necrosis (Figure 2).

Following the discovery of biliary necrosis, the patient continued to deteriorate clinically. He was treated with intravenous antibiotics and numerous drainage procedures. Despite these, his condition worsened, and decision was eventually made for palliation. The patient subsequently passed away on best supportive care.

#### DISCUSSION

Hepatic lymphoma is rare, with majority of patients presenting with vague, non-specific symptoms. This was encountered in our case, where the patient presented with non-hepatobiliary related symptoms. Imaging and histological correlation in our case eventually led to the diagnosis of diffuse large B cell lymphoma involving both the liver and the acetabulum.

Reports of radiation induced biliary complications have been described, which includes stricture, necrosis, etc. A study by Yu et al. found that the most common biliary changes post-hypofractionated radiation therapy in patients with hepatocellular carcinoma is that of biliary dilatation [5]. A small proportion of patients developed biloma and strictures.

Our patient represents a rare case of extensive biliary necrosis post combination therapy. The consolidation RT dose used in our case was considered low to intermediate that is 39.6 Gy in 18 fractions. This made the discovery of biliary necrosis atypical. In addition, the occurrence of necrosis appeared too soon for RT-induced organ necrosis. The authors believe that in our case, biliary necrosis can also be contributed by tumor infiltration of the bile ducts with subsequent tumor necrosis following combination therapy.

This is a single retrospective case report, which limits the ability to generalize our findings.

#### CONCLUSION

This case report demonstrates a rare case of biliary necrosis, possibly related to the natural history of tumor necrosis and treatment (combination therapy), in a patient with hepatic lymphoma.

#### TEACHING POINT

This case report demonstrates a rare case of biliary necrosis, possibly related to the natural history of tumor necrosis and treatment (combination therapy), in a patient with hepatic lymphoma.

#### AUTHORS' CONTRIBUTIONS

Daniel Yuxuan Ong- 1<sup>st</sup> author, manuscript writing.  
Yi-Wei Wu- Corresponding author, manuscript writing and vetting.

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Not applicable.

#### DISCLOSURES

No disclosures.

#### CONSENT

No written informed consent for submission of this manuscript for publication.

This report fulfils our institution's criteria for ethics board waiver.

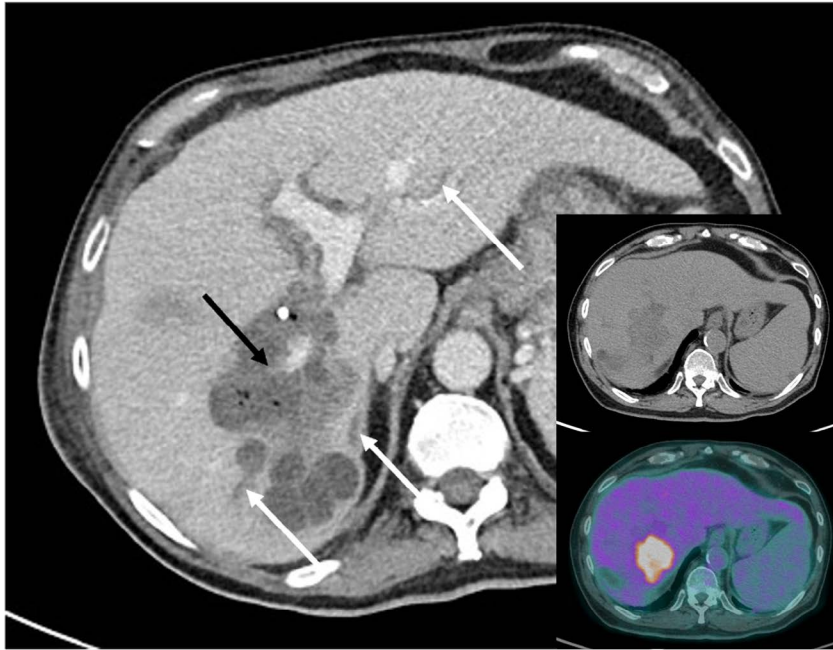
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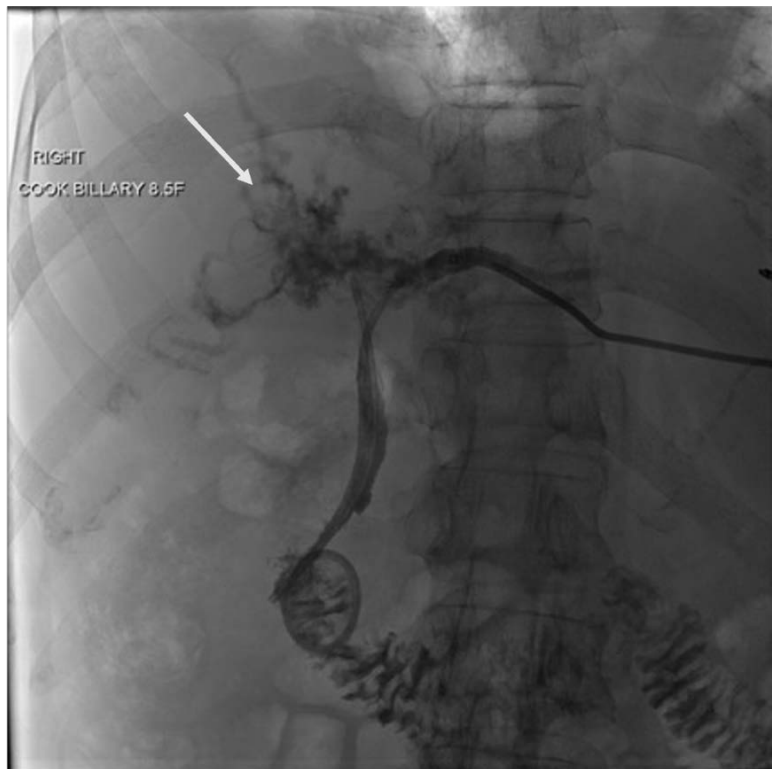
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FIGURES



**Figure 1:** The right hepatic lobe tumor (hepatic lymphoma) is noted with gas foci within the necrotic component. The right portal vein courses through the necrotic mass and appears attenuated (black arrow). Several dilated intrahepatic ducts are seen connected to the necrotic mass (white arrows). Image insets: Preceding positron emission tomography computed tomography (PET CT) images which demonstrates a fluorodeoxyglucose (FDG)-avid right hepatic lobe mass.



**Figure 2:** Intra-operative cholangiogram during left-sided percutaneous transhepatic biliary drainage procedure demonstrates complete disruption of right-sided ducts (white arrow), compatible with biliary necrosis.

## KEYWORDS

*Biliary necrosis; hepatic lymphoma; radiation therapy; chemotherapy; combination therapy*

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