

Supplement Gone Wrong: Drug-Induced Liver Injury Caused by Artemisinin

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Introduction

- DILI is hepatic dysfunction caused by prescription medications, supplements, or xenobiotics after alternative causes have been excluded.
- As a leading cause of acute liver failure, DILI should be considered when patients present with hepatic dysfunction.
- We present a case of symptomatic DILI due to *artemisinin* use.

Case Presentation

- A 78-year-old Chinese man with no medical history presented to the clinic with 10 weeks of jaundice, weakness, and pruritis.
- He started taking *Artemisinin/ Bioperine* 12 weeks ago to prevent COVID-19 but stopped 3 weeks prior to presentation.
- Physical exam revealed scleral icterus with no other signs of chronic liver disease.
- Initial labs showed total bilirubin 11 mg/dL, ALP 293 U/L, AST 170 U/L, ALT 196 U/L, and negative hepatitis A, B, and C.
- CT abdomen and MRCP were unremarkable for liver or biliary pathology.
- Further serological workup was negative.
- Follow-up labs after stopping the supplement revealed normalization of liver enzymes and bilirubin.
- Based on RUCAM criteria, patient had a total score of 7 indicating “probable causality”:
 - *mixed liver injury pattern and first exposure*
 - *onset of 70 days (+2)*
 - *course of ALP decreased greater than 50% within 180 days (+2)*
 - *risk factors being alcohol (0)*
 - *age > 55 (+1)*
 - *no concomitant therapy (0)*
 - *no alternative causes (+1)*
 - *reaction published but not labeled (+1)*
 - *response to re-administration not available (0)*
- Liver biopsy was not pursued, and he was instructed to avoid supplements unless prescribed.

Images

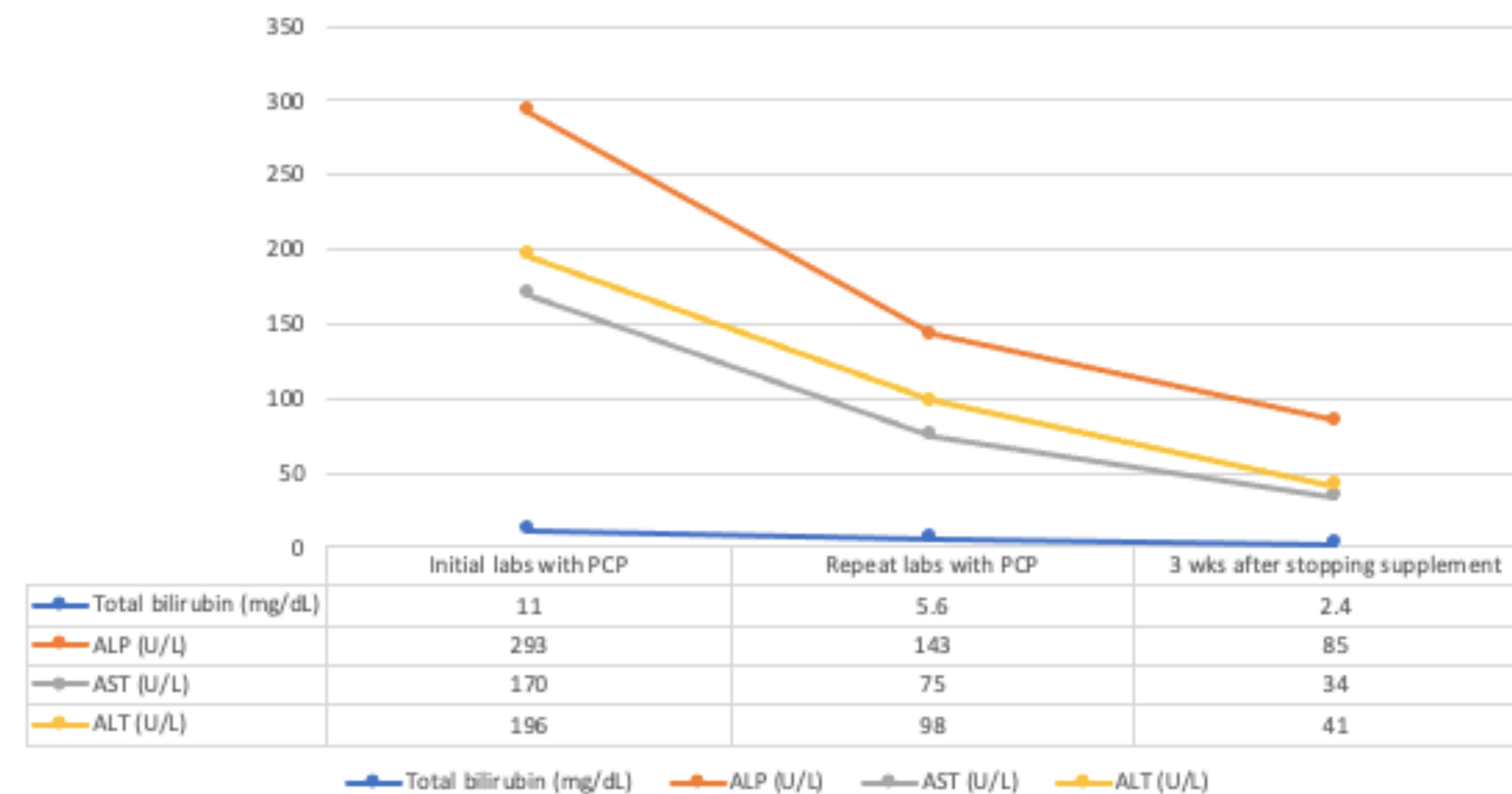


Figure 1: Graph and table showing patient’s laboratory values (total bilirubin, alkaline phosphatase, AST and ALT) improving after stopping *Artemisinin/ Bioperine*.



Figure 2: *Artemisinin/ Bioperine* supplements that patient took (left), *Artemisia annua* plant, powder, and molecular structure (right).

Discussion

- The estimated global annual incidence rate of DILI is 13.9-24.0 per 100,000 persons.
- Complications of DILI include acute liver injury and liver failure.
- Since COVID-19 emerged, supplement use has increased given claims of boosting the immune system.
- *Artemisinin* is a traditional Chinese medicine herb with antimalarial activity investigated as a possible COVID-19 treatment.
- No current evidence exists to support *artemisinin* being effective against COVID-19.
- *Artemisinin* can cause idiosyncratic acute liver injury from self-limited transaminitis to severe cases requiring emergent liver transplantation.
- Our patient’s supplement also contained *Bioperine*, a black pepper extract, which is likely benign.
- His unrevealing workup, spontaneous improvement correlating with supplement discontinuation, and RUCAM score led to high suspicion of DILI secondary to *artemisinin*.
- Providers should always ask patients about supplement use and consider DILI when patients present with liver injury.

References

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