

Introduction

- ◆ Whey protein is a milk byproduct commonly used as a dietary supplement
- ◆ Recommended dose is 1-2 scoops per day (25-50 grams protein)
- ◆ Bioactive peptides have a variety of effects
- ◆ Adverse effects of supplementation are poorly understood
- ◆ Rare cases have been reported in which whey protein is associated with DILI
- ◆ Risk factors include underlying liver disease, female sex, and drug cross-reactivity
- ◆ Treatment includes drug discontinuation and supportive care

Case Description

- ◆ A 40-year-old female presented with 3 days of nausea, jaundice, and scleral icterus
- ◆ Medical history included obesity, alpha thalassemia carrier, and hypothyroidism
- ◆ Two months prior, started consuming whey protein shakes twice daily
- ◆ No herbal supplements or medication changes
- ◆ On presentation, alert and oriented x4 with jaundice and scleral icterus
- ◆ CT abdomen/pelvis showed hepatomegaly
- ◆ Whey protein held and N-acetylcysteine empirically given

Lab Work

Serum Labs						
Admit Day	ALT	AST	ALP	Total bilirubin	Platelet	INR
0	2502	1434	127	11.0	217,000	1.42
1	2815	>1600	136	18.5	257,000	1.56
2	2399	1377	124	17.4	279,000	
4	2170	1189	122	16.4	271,000	1.47
6	2199	901	117	15.4	313,000	1.52
8	2067	859	125	11.8	-	1.50

Table 1. Relevant patient lab work from admission (day 0) to discharge (day 8)

Histology

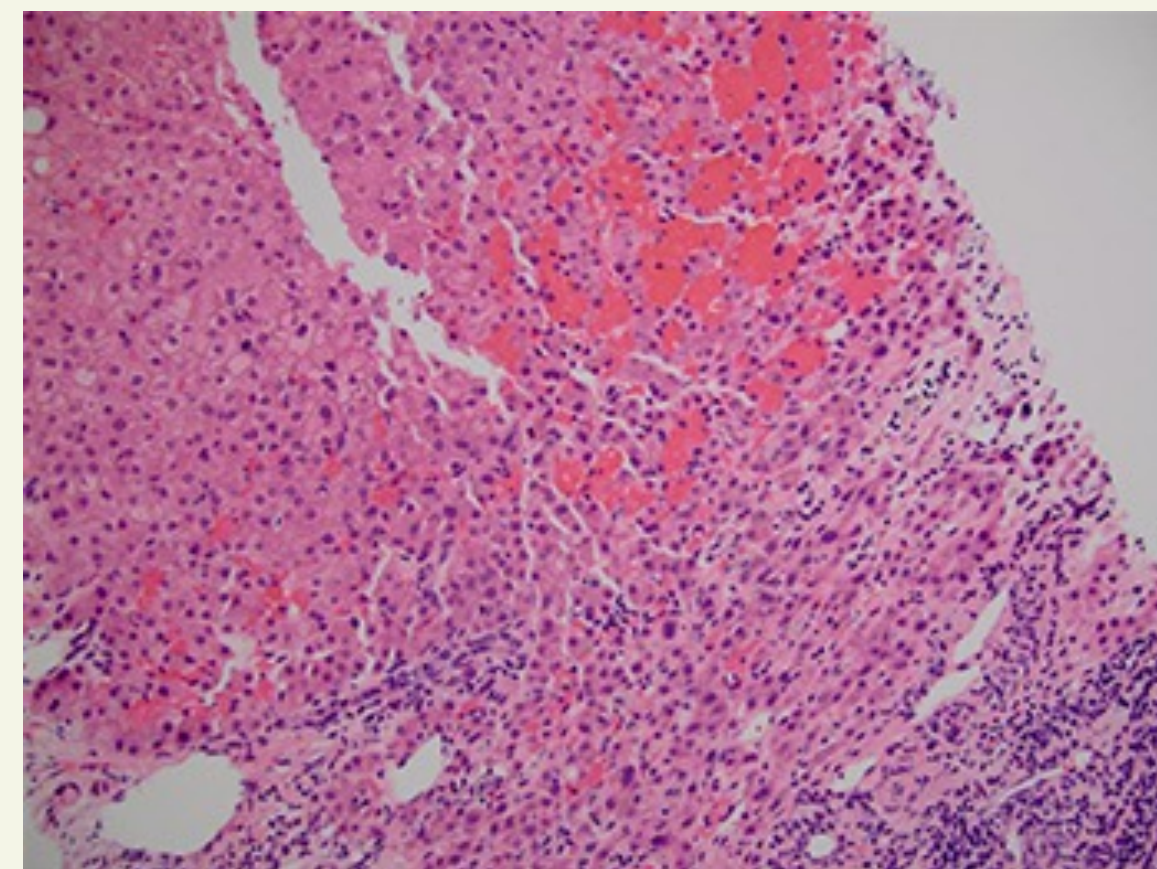


Figure 1. Liver biopsy showing diffuse ballooning degeneration of hepatic parenchyma, lobular disarray, acidophil bodies, and pericentral hepatocyte dropout

Image citation: Lusk, K. (2017, April). Drug-Induced Liver Injury: Liver pathology's big imitator [Review of College of American Pathologists 2016 Annual Conference]. CAP Today. Retrieved 2022, from <https://www.cap.org/publications/cap-today>

Clinical Course

- ◆ Evaluation for other causes of acute liver injury was remarkable for prior EBV infection
- ◆ Negative work-up for viral hepatitis, CMV, HIV, hemochromatosis, Wilson's disease, and autoimmune hepatitis
- ◆ A liver biopsy was performed on hospital day 7
- ◆ Pathology was consistent with DILI (predominant hepatocellular pattern of injury)
- ◆ Lab work improved and symptoms resolved
- ◆ Patient was discharged home on hospital day 8

Discussion

- ◆ Whey protein is a commonly used supplement with poorly understood adverse effects
- ◆ In very rare cases, whey protein is associated with DILI
- ◆ Mechanism of injury remains poorly understood
- ◆ Whey protein may increase hepatocyte apoptosis (short-term) and inflammatory signals (long-term)
- ◆ Monitoring of liver function is not routinely recommended in patients using whey protein

Conclusion

- ◆ In evaluation for DILI, most supplements should be stopped (including those commonly marketed as safe for consumption)
- ◆ Further studies are needed to clarify the adverse effects of whey protein use