

JAUNDICE

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| PRIMARILY UNCONJUGATED BILIRUBIN |
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Increased production	Portocaval shunt
Erythropoiesis, ineffective	Sepsis
Hemolysis	Decreased bilirubin conjugation (decreased glucuronyl transferase activity)
Extravascular	
Intravascular	
Hemolytic anemia	Acquired transferase deficiency
Pulmonary infarction	Drugs
Resorption of hematoma or hemoperitoneum	Hepatocellular disease
Transfusion with old blood	Crigler-Najjar syndrome
Decreased hepatic uptake	Gilbert's syndrome
Fasting, prolonged	Neonatal jaundice
Gilbert's syndrome	Sepsis

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IMPAIRED HEPATIC EXCRETION

Acquired	Intrahepatic cholestasis (recurrent, benign)
Cholangitis	Rotor syndrome
Cirrhosis	Miscellaneous
Cholestasis	Amyloidosis
Drugs	Congestive heart failure
Toxins	Hepatic malignancy
Hepatitis	Hepatic trauma
Hepatocellular disease	Sarcoidosis
Familial or hereditary disorders	Sepsis
Dubin-Johnson syndrome	Shock
Cholestatic jaundice of pregnancy	Toxemia of pregnancy

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EXTRAHEPATIC BILIARY OBSTRUCTION

Acquired	Gallbladder
Cholangitis	Pancreas
Choledocholithiasis	Familial or hereditary disorders
Cholelithiasis	Bile duct atresia
Common duct injury	Cholestatic jaundice
Compression, external	of pregnancy
Pancreatitis, chronic	Cystic fibrosis
Strictures	Dubin-Johnson syndrome
Common duct	Idiopathic dilatation of common bile duct
Sphincter of Oddi	Intrahepatic cholestasis
Tumor	(recurrent, benign)
Ampulla of Vater	
Bile ducts	Rotor syndrome

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EFFECTS OF DRUGS	
Acetaminophen	Ethambutol
Anabolic steroids	Etretinate
Azathioprine	Fusidic acid
Benzodiazepines	Halothane
Chlordiazepoxide	Iodoxuridine
Diazepam	Immune globulin
Carbamazepine	Methyldopa
Chloral hydrate	Methylene blue (neonates)
Chlorpropamide	Nitrofurantoin
Cyproheptadine	Nonsteroidal anti-inflammatory agents
Dantrolene	Benoxyprofen
Dapsone	Diclofenac
Dinoprostone (neonatal)	Diflunisal
Disopyramide	Ibuprofen
Enflurane	Phenylbutazone
Erythromycin (estolate, ethylsuccinate)	

JAUNDICE

EFFECTS OF DRUGS	
Oral contraceptives	Sulfonamides
Paraaminosalicylic acid	Cotrimoxazole
Penicillamine	Sulfonylureas
Phenazopyridine	Tolbutamide
Phenothiazines	Tetracyclines
Chlorpromazine	Demeclacycline
Fluphenazine	Minocycline
Perphenazine	Oxytetracycline
Prochlorperazine	Ticlopidine
Thioridazine	Tricyclic antidepressants
Propoxyphene	Amitriptyline
Pyrazinamide	Desipramine
Rifampin	Imipramine
Spectinomycin	Valproic acid

JAUNDICE

EFFECTS OF TOXIC AGENTS	
Arsine	Hexachloronaphthalene
Bismuth	Hydroquinone
Carbon tetrachloride	Methylenedianiline
Copper	Monomethylhydrazine mushrooms
Cyclopeptide mushrooms	Oxyphenisatin
Diethylene glycol	Phenols
Dimethylsulfate	Phosphine
Dinitrophenols	Phosphorus

REFERENCES

- Adler SN, Lam M & Connors AF Jr: A Pocket Manual of Differential Diagnosis. Little Brown, Boston, MA, 1982.
- Ananth JV, Ban TA & Lehmann HE: Tolbutamide jaundice associated with multiple drug therapy. Can Med Assoc J 1970; 103:1194.
- Badley BW: Phenazopyridine-induced hepatitis. Br Med J 1976; 2:850.
- Bakris GL, Cross PD & Hammersten JE: Disopyramide-associated liver dysfunction. Mayo Clin Proc 1983; 58:265-267.
- Barzilai D: Cholestatic jaundice caused by D-penicillamine. Ann Rheum Dis 1978; 37:98.
- Biour M, Toussaint P, Duhamel G et al: Ticlopidine: blood and liver disorders? Therapie 1982; 37:222-224.
- Burns WA, Vander Weide G, Goldstein LI et al: Cytoplasmic crystalline regions in hepatocytes of liver biopsy specimens. Arch Pathol 1974; 97:43.

REFERENCES

- Chalmers TM: Clinical experience with ibuprofen in the treatment of rheumatoid arthritis. Ann Rheum Dis 1969; 28:513.
- Clayton GD & Clayton FE (Eds): Patty's Industrial Hygiene and Toxicology, vol 2, 3rd ed. John Wiley & Sons, New York, NY, 1982.
- Collins WS & Dobkins GB: Cholestatic jaundice following use of sulfonylurea drugs. NY J Med 1965; 907-909.
- Foutch PG, Ferguson DR & Tuthill RJ: Enflurane-induced hepatitis with prominent cholestasis. Cleve Clin J Med 1987; 54:210-213.
- Gabriel R: Rifampicin jaundice. Br Med J 1971; 3:182.
- Gavish D, Katz M, Gottehrer N et al: Cholestatic jaundice, an unusual side effect of etretinate. J Am Acad Dermatol 1984; 13: 669-670.
- Gosselin RE, Smith RP & Hodge HC (Eds): Clinical Toxicology of Commercial Products, 5th ed. Williams & Wilkins, Baltimore, MD, 1984; pp III-42-III-47.

REFERENCES

- Goudie BM, Birnie GF, Watkinson G et al: Jaundice associated with the use of benoxaprofen. Lancet 1982; 1:959.
- Greenberger NJ, Berquist K, Marpoles B et al: The Medical Book of Lists: A Primer of Differential Diagnosis in Internal Medicine, 2nd ed. Year Book Med Publ, Chicago, IL, 1987.
- Haeri AO, Scher J, Davey DA et al: Comparison of oral prostaglandin E2 and intravenous oxytocin for induction of labour. S Afr Med J 1976; 50:516-518.
- Henry DA, Lowe JM & Donnelly T: Jaundice during cyproheptadine treatment. Br Med J 1978; 1:753.
- Hollister LE: Allergy to chlorpromazine manifested by jaundice. Am J Med 1957; 23:870-879.

Isselbacher KJ, Adams RD, Braunwald E et al (Eds): *Harrison's Principles of Internal Medicine*, 9th ed. McGraw-Hill, New York, NY, 1980.

REFERENCES

John TJ, Ninan GT, Rajagopalan MS et al: Epidemic hepatitis B caused by commercial human immunoglobulin. *Lancet* 1979; 1:1074.

Kopelman H, Robertson MH, Sanders PG et al: The Epping jaundice. *Br Med J* 1966; 1:514-516.

Lee TH & Rees PJ: Hepatotoxicity of dextropropoxyphene. *Br Med J* 1977; 2:296.

Lieberman DA, Keefe EB & Stenzel P: Severe and prolonged oral contraceptive jaundice. *J Clin Gastroenterol* 1984; 6:145-148.

Lloyd-Still JD, Grand RJ & Vawter GF: Tetracycline hepatotoxicity in the differential diagnosis of postoperative jaundice. *J Pediatr* 1974; 84:366-370.

Lundin SR, Uden DL & Hanson RF: Dantrolene-associated hepatitis. *Drug Intell Clin Pharm* 1977; 11:278.

REFERENCES

Manor E, Marmor A, Kaufman S et al: Massive hemolysis caused by acetaminophen. Positive determination by direct Coombs' test. *JAMA* 1976; 236:2777.

Marrubbio AT & Danielson B: Hepatic veno-occlusive disease in a renal transplant patient receiving azathioprine. *Gastroenterology* 1975; 69:739.

Maxwell JD & Williams R: Drug-induced jaundice. *Br J Hosp Med* 1973; 9:193.

McCarron MM, Gaddis GP & Trotter AT: Acute yellow phosphorus poisoning from pesticide pastes. *Clin Toxicol* 1981; 18:693-711.

McDermott W, Ormond L, Muschenheim C et al: Pyrazinamide-isoniazid in tuberculosis. *Am Rev Tuberculosis* 1954; 69:319-333.

McEnerney JK & McEnerney LN: Unfavorable neonatal outcome after intraamniotic injection of methylene blue. *Obstet Gynecol* 1983; 61(Suppl):35S-37S.

REFERENCES

Morgan DH: Jaundice associated with amitriptyline. *Br J Psychiatry* 1969; 115:105-106.

Muscat-Baron JM & Freeman DM: Toxic hepatitis following phenylbutazone therapy. *Br J Clin Pract* 1966; 20:437.

Newman HW, Van Winkle W, Kennedy NK et al: Comparative effects of propylene glycol, other glycols, and alcohol on the liver directly. *J Pharmacol Exp Ther* 1940; 68:194-200.

Patel J & Schneider R: Hepatotoxic reaction to erythromycin ethylsuccinate. *South Med J* 1984; 77:1343-1344.

Powell WJ Jr, Koch-Weser J & Williams RA: Lethal hepatic necrosis after therapy with imipramine and desipramine. *JAMA* 1968; 206: 642-645.

Proctor NH & Hughes JP: Chemical Hazards of the Workplace. JB Lippincott, Philadelphia, PA, 1978; pp 281-282.

REFERENCES

- Product Information: Dapsone, Jacobus Pharmaceutical Company, Princeton, NJ, 1984.
- Product Information: Fusidic Acid (Fusidin(R)), Pennwalt of Canada Ltd, 1982.
- Reid FM: Accidental camphor ingestion. JACEP 1979; 8:339-340.
- Reynolds TB & Redeker AG: Oxyphenisatin and jaundice. JAMA 1970; 213:2273.
- Rimmer EM & Richens A: An update on sodium valproate. Pharmacotherapy 1985; 5:171-184.
- Rumack BH & Salzman E: Mushroom Poisoning. CRC Press, West Palm Beach, FL, 1978.
- Sataline L & Lowell D: Methyldopa toxicity. Gastroenterology 1976; 70:148.

REFERENCES

- Shader RE (Ed): Manual of Psychiatric Therapeutics. Little Brown, Boston, MA, 1975.
- Sherlock S: Diseases of the Liver and Biliary System. Blackwell Scientific Publ, Oxford, UK, 1975; pp 340-382.
- Silk BR & Roome APCH: Herpes encephalitis treated with intravenous idoxuridine. Lancet 1970; 1:411-412.
- Skillman DR & Taormina MK: Spectinomycin and cholestatic jaundice. Ann Intern Med 1985; 103:805-806.
- Soffer EE, Taylor RJ, Berstam PD et al: Carbamazepine-induced liver injury. South Med J 1983; 76:681-683.
- Sochocky S: Acute hepatitis due to para-aminosalicylic acid. Br J Clin Pract 1971; 25:179-182.
- Thies PW & Dull WL: Trimethoprim-sulfamethoxazole-induced cholestatic hepatitis. Arch Intern Med 1984; 144:1691-1692.

REFERENCES

- Tizes R: Liver toxicity and muscular dystonia associated with prochlorperazine. NY J Med 1972; 72:1083.
- Warren JS: Diflunisal-induced cholestatic jaundice. Br Med J 1978; 2:736.
- Warthin AS: A fatal case of toxic jaundice caused by dinitrophenol. Bull Int Assoc Med Mus 1918; 7:123-126.
- Way LW & Sleisenger MH: Biliary obstruction, cholangitis, and choledocholithiasis. In: Sleisenger MH & Fordtran JS (Eds): Gastrointestinal Disease: Pathophysiology Diagnosis Management. WB Saunders, Philadelphia, PA, 1983; pp 1389-1403.
- Wilson R, Lovejoy FH, Jaeger RJ et al: Acute phosphine poisoning

aboard a grain freighter. JAMA 1980; 244:148-150.

Winship KA: Toxicity of bismuth salts. Adv Drug React Ac Pois Rev 1983; 2:103-121.

REFERENCES

Zafrani ES, Ishak KG & Rudeki C: Cholestatic and hepatocellular injury associated with erythromycin esters. Dig Dis Sci 1979; 24: 385-396.

Zimmerman HJ: Drug-induced liver disease. Drugs 1978; 16:25-45.

Zimmerman HJ: Hepatotoxicity: The Adverse Effects of Drugs and Other Chemicals on the Liver. Appleton-Century-Crofts, New York, NY, 1978; pp 181-185, 363-364.