

Multiple drugs

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Liver damage due to drug toxicity: 14 case reports

In a study involving 78 patients who died due to COVID-19 between 10 March 2020 and 16 June 2020 in Belgium, 14 patients (4 women and 10 men) aged 50–83 years were described, who developed liver damage due to toxicities of aciclovir, amiodarone, amoxicillin, aspirin, ceftazidime, cefuroxime, ciprofloxacin, chloroquine, hydroxychloroquine, darunavir, emtricitabine, flucloxacillin, ganciclovir, meropenem, oxacillin, temocillin, tenofovir or vancomycin. The chloroquine and hydroxychloroquine were used off-label for the COVID-19 infection [dosages, routes and times to reactions onsets not stated; not all indications stated].

The patients were hospitalised with the diagnosis of COVID-19 infection. Subsequently, the patients started receiving antibacterial therapy with amoxicillin (1 patient),

ceftazidime and meropenem for *Pseudomonas aeruginosa*, and off-label hydroxychloroquine for COVID-19 (1 patient), off-label hydroxychloroquine for COVID-19 with aspirin [acetylsalicylic acid] (1 patient), cefuroxime for *Escherichia coli* with amiodarone (1 patient), off-label hydroxychloroquine for COVID-19 and cefuroxime for *Haemophilus* (1 patient), off-label hydroxychloroquine for COVID-19 and oxacillin for *Staphylococcus aureus* (1 patient), off-label hydroxychloroquine for COVID-19, and amoxicillin and ciprofloxacin for *Staphylococcus aureus* infection and *Haemophilus* (1 patient), off-label hydroxychloroquine for COVID-19, and ceftazidime and vancomycin for *Staphylococcus aureus* infection (1 patient), off-label hydroxychloroquine for COVID-19 (1 patient), ciprofloxacin and vancomycin for *Bacteroides distasonis* (1 patient), off-label hydroxychloroquine for COVID-19 and cefuroxime for *Haemophilus* (1 patient), off-label hydroxychloroquine for COVID-19, aciclovir and ganciclovir for Herpes simplex virus-1, and oxacillin, ciprofloxacin, flucloxacillin, ceftazidime, temocillin and vancomycin for *Enterobacter*, *Staphylococcus aureus* and *Pseudomonas* (1 patient), off label chloroquine and hydroxychloroquine for COVID-19, darunavir, emtricitabine and tenofovir for HIV, and ciprofloxacin [Ciproxin] for *Enterobacter aerogenes* (1 patient) or ciprofloxacin and vancomycin for *Bacteroides distasonis* infection (1 patient). However, all the patients died after 5–52 days of hospitalisation. One of the 14 patients was considered cured of COVID-19, and was discharged from intensive care, but died after 2 days in the setting of acute mesenteric ischaemia. Autopsy findings showed liver damage in the setting of possible drug toxicity and COVID-19 infection, and cause of the deaths were confirmed as COVID-19 related severe hypoxaemic pneumonia for all.

Schmit G, et al. The Liver in COVID-19-Related Death: Protagonist or Innocent Bystander?. *Pathobiology* 88: 88-94, No. 1, Jan 2021. Available from: URL: <http://doi.org/10.1159/000512008>

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