

LITERATURE REVIEW SARS-CoV 2 Clinical Presentation

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TYPICAL PRESENTATION

SYMPTOMS

fever (more likely in adults), cough, dyspnea, myalgias, fatigue, anorexia, anosmia, dysgeusia, diarrhea, nausea/ vomiting, abdominal pain, sputum production, headache, hemoptysis, acute pulmonary embolism

LABS

lymphocytopenia, decreased albumin, elevated CRP, elevated LDH, elevated ESR, normal procalcitonin

IMAGING

bilateral ground glass opacities on CT

KEY GROUPS FOR ATYPICAL PRESENTATION

RISK FACTORS FOR SEVERE DISEASE, MORBIDITY, AND MORTALITY

IMMUNOCOMPROMISED

- ON LONG TERM GLUCOCORTICIDS: longer incubation and viral shedding periods
- ORGAN TRANSPLANTS: may present with more severe symptoms of COVID-19 pneumonia, and also have longer incubation and viral shedding periods
- HIV+ PATIENTS: longer course and slower seroconversion, CT with high density patchy shadows and unclear boundaries in peripheral lung involving interlobar fissures

CHILDREN

- Less severe than adults
- Less likely to present with fever, shortness of breath or cough than adults
- If symptoms are present, most common: fever, cough, sore throat
- Young children (infants) more susceptible to severe disease than older children
- Common lab findings: thrombocytosis, lymphopenia, neutropenia, elevated CRP, elevated procalcitonin, elevated CK, elevated ALT
- Imaging: Most common radiologic finding is bilateral ground glass opacities and nonspecific unilateral/bilateral lesions on chest CT
- Kawasaki-like presentation is an emerging clinical finding and is discussed on the pediatric infographic

PREGNANT WOMEN

- Most are asymptomatic or mild.

ELDERLY

- Can be asymptomatic
- ICU patients are more likely to be elderly
- Common symptoms are fever, cough, dyspnea, with lymphocytopenia

SEVERE DISEASE

- Older age, HTN, elevated cytokines (IL-2R, IL-6, IL-10, TNF-a), high LDH, DM, COPD, cardiovascular disease, cerebrovascular disease

MORBIDITY

- Elevated neutrophil count,
- Increased BUN and LDH related to renal failure, hearth failure or multi-organ failure
- Acute cardiac injury 13 times more common in ICU-COVID patients than in non-ICU COVID patients
- Fibrinolysis shutdown (elevated D-Dimer and complete failure of clot lysis at 30 minutes on TEG) predicts thromboembolic events and need for hemodialysis

MORTALITY

- >65yrs, male sex, CV disease, DM, chronic respiratory disease, dyspnea, ARDS, HTN, cancer, cerebrovascular disease, high SOFA score, leukocytosis, high LDH level, cardiac injury, hyperglycemia, high-dose corticosteroid use, kidney disease, prolonged PT
- Cardiac troponin I $\geq 0.05\text{ng/mL}$
- Increased fibrin degradation products; D-dimer $>1\text{ microgram/mL}$
- High neutrophil:lymphocyte ratio (especially in males)
- CD3+ CD8+ T cells $\leq 75\text{ cell/microliter}$, decreased CD4+ count
- Increased markers for myocardial injury, inflammation and bacterial infections
- AKI during hospitalization

COMMON COMPLICATIONS

<p>LUNGS</p> <ul style="list-style-type: none"> ARDS: 15-33% of cases (8 days after sx onset); increased risk in older age, neutrophilia, increased LDH, increased D-Dimer, age >65yrs, DM, HTN Acute respiratory failure: 8% of cases; leading cause of mortality Pneumonia 	<p>THROMBOTIC</p> <ul style="list-style-type: none"> 31% incidence of thrombotic complications in one study of 184 pts predisposes to venous and arterial thromboembolic events due to excessive inflammation, hypoxia, immobilization and DIC PE is most frequent thrombotic complication Age and coagulopathy (PT>3s, APTT>5s) are independent predictors
<p>CARDIO-VASCULAR</p> <ul style="list-style-type: none"> Reported in 7-20% of cases. Prevalence high among patients who are severely ill Vascular inflammation cardiac arrhythmias, myocarditis, cardiomyopathy, acute onset heart failure, MI, cardiac arrest Less common: myocarditis, cardiac tamponade, fulminant myocarditis 	<p>KIDNEY</p> <ul style="list-style-type: none"> Low prevalence, but is a marker of multi organ failure and severe disease 40% pts with proteinuria and 26% with hematuria on admission 5% pts developed AKI and increased hospital mortality Stage 3 AKI in 50% of pts; rhabdomyolysis, metabolic acidosis, and hyperkalemia Old age, DM, severe illness, and positive fluid balance are associated factors
<p>LIVER</p> <ul style="list-style-type: none"> Reported in 14-53% of cases Abnormal aminotransferase levels in patients with severe illness (AST and ALT >40) Clinically significant liver injury is uncommon 	<p>NEUROLOGIC</p> <ul style="list-style-type: none"> Viral invasion of CNS in patients with severe illness Observed in 36% of 214 patients in one study Acute CVA disease, impairment of consciousness, ataxia, seizures, and encephalopathy; prognosis is poor for these patients
<p>INFECTION</p> <ul style="list-style-type: none"> Sepsis and septic shock reported in 4-8% of cases Secondary infection reported in 6-10% of cases; staph and strep are common DIC: cytokine release syndrome with persistent fevers, increased ferritin, D-dimer, and proinflammatory cytokines 	<p>PREGNANCY</p> <ul style="list-style-type: none"> Fetal distress, premature labor, newborn thrombocytopenia, elevated liver enzymes, respiratory distress Miscarriage, IUGR, and preterm birth 1 case of stillbirth