Pneumonia

Radiographic images of multiple patients with chronic granulomatous disease (CGD) with invasive fulminant mulch pneumonia caused by (A) *Absidia corymbifera* and *Aspergillus* species. (B) *Aspergillus* species and *Rhizopus* species. (C) *Aspergillus* species, *Penicillium* species, *Rhizopus* species, and *Streptomyces thermoviolaceus*. (D) *Aspergillus* species. (E) Unknown. (F) *Aspergillus* species and *Streptomyces* species.

**Common infectious pathogens:**

Adapted with permission from Siddiqui et al.¹

*Note: This is not a complete list of complications of CGD nor of infectious pathogens.*
Lymphadenitis
Lymphadenitis caused by a *Haemophilus aphrophilus* infection in a 10-year-old boy with known CGD. Contrast-enhanced CT scan shows a large abscess with enhancing septa in the right side of the neck (white arrow).

**Common infectious pathogens:**
*Candida* species, *Klebsiella* species, *Staphylococcus aureus*

Adapted with permission from Khanna et al.²

Hepatic abscess
Hepatic abscesses in patients with CGD. (A) Typical appearance of an excised hepatic abscess in a patient with CGD. (B) Coronal postgadolinium MRI image of a hepatic abscess in an 18-year-old patient with CGD.

**Common infectious pathogens:**
*Candida* species, *Staphylococcus aureus*

Adapted with permission from Lublin et al.³

Adapted with permission from Leiding et al.⁴

Skin and soft tissue abscesses
Skin ulcers resulting from *Serratia marcescens* infection in a 20-year-old patient with CGD. (A) Ulcerating lesion on the inner right thigh. (B) Ulcerating lesions on the left scrotum. (C) Lesions on the inner aspect of the right upper arm.

**Common infectious pathogens:**
*Candida* species, *Klebsiella* species, *Serratia marcescens, Staphylococcus aureus*

Adapted with permission from Friend et al.⁵

Osteomyelitis
Osteomyelitis in a 4-year-old patient with CGD who presented with a limp. Anteroposterior (A) and lateral (B) radiographs of the lower leg show a lytic lesion with surrounding sclerosis in the tibial diaphysis.

**Common infectious pathogens:**
*Aspergillus* species, *Nocardia* species, *Serratia marcescens, Staphylococcus aureus*
**Inflammatory bowel disease**
Endoscopic and histologic appearances of inflammatory bowel disease in CGD. (A) Colonoscopic view with well-demarcated area of inflammation and ulceration. (B) Colonic mucosa with active inflammation with withered crypts. (C) Active chronic colitis. (D,E) Well-formed epithelioid granuloma with Langhans-type giant cells. (F) Pigment-laden macrophages in noninflamed regions of bowel.

![Image A](image1.png)
![Image B](image2.png)
![Image C](image3.png)
![Image D](image4.png)
![Image E](image5.png)
![Image F](image6.png)

Adapted with permission from Marks et al.6

**Gastric outlet obstruction**
Gastric outlet obstruction in a symptomatic 9-year-old boy with CGD. (A) Ultrasonographic scan with thickening of the antral wall and narrowing of the lumen. (B) Image from a barium study showing marked narrowing and elongation of the pyloric channel and thickening of the gastric folds.

![Image A](image7.png)
![Image B](image8.png)

Adapted with permission from Khanna et al.2

**References:**