Rare/Novel Case of Quetiapine-Induced Pneumonitis

Principal Author: Raheel Chaudhry MD, Sohail Nibras MD.

Baylor College of Medicine

Abstract

•**Introduction:** Quetiapine is an FDA-approved atypical antipsychotic used to treat schizophrenia, bipolar disorder, major depressive disorder, and generalized anxiety disorder. Quetiapine is also regarded as an effective and safe treatment for patients with delirium. Quetiapine can be associated with an increased risk of pneumonia/pneumonitis or DILD (Drug-Induced Interstitial Lung Disease) at the beginning of treatment.

•We present a case of quetiapine exposure leading to pneumonitis or Drug-Induced Interstitial Lung Disease (DILD) and discuss the risk of this adverse outcome in clinical practice.

•**Case Report:** A 39-year-old patient with schizoaffective disorder acquired pneumonia/pneumonitis 2 months after starting quetiapine. We performed a literature review of common databases including Cochrane, PubMed, Embase, Clinical Key, Medline, Web of Science.

•**Search Terms:** Quetiapine-induced pneumonia, quetiapine-induced pneumonitis, quetiapine and pneumonia, interstitial pneumonia and quetiapine, Seroquel and pneumonia. Seroquel-induced dysphagia, antipsychotic use, pneumonia, drug-induced interstitial lung disease (DILD).

•**Conclusion:** Through this case discussion and review of current literature, we present information on the possible mechanism by which quetiapine can lead to pneumonia, pneumonitis, or DILD. The literature supports a strong positive correlation between quetiapine-causing pneumonia/pneumonitis or DILD. We alert clinicians to be aware of signs and symptoms and provide treatment recommendations for quetiapine-induced pneumonia/pneumonitis or DILD.

Case Presentation

- 39-year-old male presents to the ED with worsening Dyspnea and cough for the last 2 weeks; the patient has past medical history of schizoaffective disorder and is currently on Quetiapine 100mg. Other current medications include valproic acid 1500mg and escitalopram 10mg daily. He was treated for pneumonia with vantin, flagyl, azithromycin, and prednisone. Patient underwent a CT chest scan suggesting cryptogenic organizing pneumonia, or hypersensitivity pneumonitis, or quetiapine-induced pneumonitis.
- Quetiapine was added to the medication regimen 2 months prior to admission. Patient developed lingering recurrent pneumonia without adequate response to antibiotics and there was suspicion that quetiapine may have been the culprit given the lack of response to Antibiotics and steroids. During his admission, a psychiatry consult was placed to evaluate the patient for Quetiapine Induced Pneumonia / Pneumonitis or DILD.

Background

- Quetiapine is an atypical antipsychotic medication that is FDA-approved for treating schizophrenia, bipolar disorder, and major depressive disorder. Quetiapine is also regarded as an effective and safe treatment for patients with delirium.
- With increasing diagnosis and treatment of psychiatric disorders, there is an increase in the use of medications to treat these disorders, thus an increase in related adverse drug reactions. Quetiapine can be associated with an increased risk of pneumonia/pneumonitis or DILD at the beginning of treatment. Drug reactions in the lungs may have serious consequences and can even be lethal if the patient continues to take the medication.
- It is well documented that drug-induced pneumonitis may present as acute or chronic interstitial pneumonitis, acute or chronic eosinophilic pneumonia, or hypersensitive pneumonitis.

Conclusion

- After quetiapine treatment, the patient complained of fever and coughed up sputum. His symptoms persisted despite empiric antibiotic treatment. All diagnostic tests for infectious causes were negative. High-resolution computed tomography revealed diffuse bilateral interstitial infiltrates. The primary differential diagnosis was DILD, and therefore, we discontinued quetiapine and began methylprednisolone treatment. His symptoms and radiologic findings significantly improved after receiving steroid therapy. We recognize a need for increased awareness among physicians of the possibility of quetiapine-associated lung injury.
- We consulted the literature to make an appropriate treatment recommendation for a complicated patient with quetiapine-induced Pneumonia/pneumonitis or DILD.

Photos

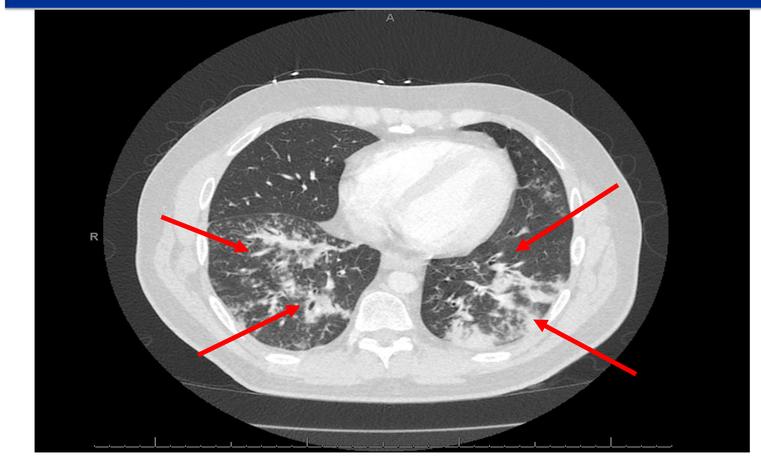

Figure 1. CT Chest with IV contrast; Horizontal Section. (Figure 1). Arrows pointing to lung infiltrates.

Discussion

- Diagnosis of Quetiapine-Induced Pneumonitis or DILD depends upon a strong association between a history of drug therapy and the onset and progression of respiratory complaints. To ensure accurate diagnosis, other causes of lung damage such as infectious, inflammatory disease must be excluded. There are 3 main mechanisms listed below:

1. Quetiapine is mainly metabolized by CYP3A4. Lungs contain CYP2D6, which is thought to be a minor contributor to the CYP-mediated metabolism of quetiapine. In our case, increased quetiapine metabolism by CYP2D6 in the lungs may have increased 7-hydroxyquetiapine, an active metabolite that may damage vital pulmonary tissue.
   There are variations in the CYP2D6 alleles across ethnicities. Reduced function or nonfunctional CYP2D6 alleles are more frequently found in Asians, Pacific Islanders, Africans, and African Americans (40 –50%) than in whites (26%). This genetic susceptibility may have played a role in our patient. CYP2D6 is the main metabolic enzyme for quetiapine and the dysfunction of the enzyme may result in toxic serum levels, and then further lead to severe side effects. The most common adverse drug reaction of psychiatric drugs is Pneumonitis or DILD.
2. Another proposed mechanism is that quetiapine may depress bulbar centers and result in inhibition of the cough, gag, and swallow reflex. Quetiapine may also produce dopaminergic and cholinergic blockade causing peripheral and central effects on swallowing and potential impairment of esophagus motility and the gag reflex.
3. Although tardive dyskinesia occurs following prolonged use of antipsychotics and usually manifests as an involuntary movement disorder of the tongue and the orofacial area, it can present as dysphagia, although rare. Further, quetiapine can cause movement disorders that may affect the muscles of the tongue and face which are associated with swallowing function. The quetiapine-induced dysphagia that led to pneumonia/pneumonitis or DILD in our case could have a similar explanation.

Refrences

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