

A Complex Pediatric Case Study of Upper Respiratory Tract Infection and  
Urinary Tract Infection

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## DIAGNOSTIC AND CLINICAL REASONING

### A Complex Pediatric Case Study of Upper Respiratory Tract Infection and Urinary Tract Infection

There are several lifestyle changes that affect our daily health conditions. Diet, medication, social and environmental factors generally influence the health status of children. Upper respiratory tract infection over the years has become a common occurrence in infants and children. Another condition/ complication that can occur in children and infants is urinary tract infection. Though not a common occurrence, urinary tract infection can occur in infants and children of both gender. It is however extremely condition in male children. The occurrence in male pediatric cases has been due to the various alterations of the earlier mentioned predisposing. These complications can manifest in different ways either directly or as a complex pediatric encounter.

A complex patient encounter generally entails the manifestations of mixed symptoms in a patient leading to a diagnosis of multiple complications. These encounters might arise due to a reduced immune system of a patient leading to the development of opportunistic infections. A common occurrence is in the case of an HIV positive patient with multiple opportunistic infections. The initial infection weakens the immune system hence paving way for other infections that would under normal body immunity cause any serious infection. This paper shall discuss a complex pediatric case report.

The HIPPA rule was observed during the preparation of this paper. The patient's name was not used in the study to preserve his privacy. The HiPPA rules, however, allow for the provision of the real patient's gender thus the actual gender of the patient was maintained in this study (Tovino, 2016). The original admission dates were altered (Tovino, 2016). The periods of readmissions were however maintained as it is vital to the establishment of the correct diagnosis (Tovino, 2016). The patient's permission was acquired as per the HiPPA rules before his data was used in the study.

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### Case Report

A 6-year-old male child was presented in the emergency department with complaints of diarrhea, cough, an abdominal pain. The symptoms have lasted for the past one week. He also had rhinorrhoea, fever, and sore throat. He had a blood pressure of 106/65 mmHg on admission, a pulse rate of 110 beats/min, and a respiratory rate of 16 breaths/min. The patient had previously suffered from gastroenteritis at the age of 2. This diagnosis was due to adenovirus infection that resulted in vomiting and diarrhea. He was treated by admission to the pediatric care center where nutrition therapy was initiated. He was given clear fluids in small but frequent intervals. Food was resumed within 24 hours and a fortified blended porridge was prepared for the child. He was given F-75 130ml/kg daily. This was administered at an interval of 2-3 hours distributed among 8 feeds throughout the day. The feeding frequency was increased from 3-hour basis to 4-hour basis and the amount of total food is increased by 20ml per day to a maximum of 200ml/day. The child reacted positively to the therapy and assumed normal health in 10 days. He later had a relapse of diarrhea with nausea, fever (101°F), and headache within a period of 1 month. Microbial analysis carried out reveal staphylococcal food poisoning. Rehydration was done by intravenous fluid and rest. The patient had no known history of antibiotic allergies in his medical. There were no known food allergies in his nutrition history.

Physical examination revealed sunken eyes, dry cracked lips, dark colored urine, dry skin, low energy levels, and excessive sleepiness nasal congestion. Examination of the GU indicated tenderness in testes and phimosis. Palpation of the suprapubic region was also observed. The thick yellow discharge was also observed in the GU examination. The weight and height of the child were taken and from it, the body mass index was formulated. This was taken to aid in the determination of the nutrition status of the child. This revealed a body mass index of 4<sup>th</sup> percentile. Nutrition therapy was initiated to

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attempt to correct this condition. Therapeutic intervention of 130ml/kg/day of F-100 was initiated to boost his nutritional status. examination of the otitis revealed the formation of an otitis media. Laboratory tests were done on the urine in order to conduct a differential diagnosis. A urine sample of the laboratory was ordered and the results were as presented as in the table below.

Parameters	Sensitivity	Specificity
LE	83 (67–94)	78 (64–92)
NT	53 (15–82)	98 (90–100)
Either LE or NT positive	93 (90–100)	72 (58–91)
Microscopy, WBCs	73 (32–100)	81 (45–98)
Microscopy, bacteria	81 (16–99)	81 (16–99)
LE, NT or microscopy positive	99.8 (99–100)	70 (60–92)

Urine test was conducted before any administration of an antibiotic. All the STI tests were negative including HIV. A rapid influenza diagnostics tests were conducted and confirmed negative for the influenza virus. Rapid spot test and rapid strep test revealed negative results. Widal test was also conducted and revealed a negative result. Albumin to Creatinine Ratio and Glomerular filtrate ratios both indicated negative results.

### Discussion

Upper respiratory tract infection is a disease caused by an acute infection of the upper region of the respiratory tract. These include larynx, sinuses or pharynx. They majorly entail, tonsillitis, laryngitis, otitis media, pharyngitis, common cold, and sinusitis (Chonmaitree, et al., 2017). They can be caused by a wide variety of viruses or bacteria. URIs continue to be the most diagnosed disease among outpatients in the United States.

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They are also accountable for about more than 20 million missed school or work cases in the United States. This can, therefore, lead to large economic burden due to reduced productivity as a result of the missed working days and the burden of the cost incurred in relief medications for the symptoms (Chonmaitree, et al., 2017). The symptoms caused by this infection usually last a week to 10 or 11 days and subside. It is, however, important to ensure that these patients are kept warm and appropriate medications are administered for the faster recovery of these symptoms. Nasal washing and throat lozenges are also encouraged as a self-care intervention. Cough medicines, anti-inflammatory drugs with no steroid composition, analgesics and dietary management are also essential in the management of this condition.

Urinary tract infection is a common occurrence in adult females (Tandugdu & Wagenlehner, 2016). This is due to the short urethra that the causative agents find conducive for movement to the bladder. On the contrary, there are minimal cases in male patients and including the male children due to the long urethra that is present in the genitourinary (GU) system of the males (Tandugdu & Wagenlehner, 2016). The males are also not prone to the infection as most of the microbes that cause this infection are already present in their GU. However, there are rare cases of occurrence of this infection within the elderly males and male infants or children. Family history of allergies to specific products can also facilitate UTI occurrence. Allergies of some type of cloth materials, lotions, soaps, deodorants, and air fresheners can facilitate increased growth of bacterial colonies hence leading to UTI infections (Flores-Mireles, Walker, Caparon, & Hultgren, 2015). Use of certain antimicrobial products can also reduce the microbial competition in the skin flora hence resulting in the overwhelming growth of a particular species. Another factor that might facilitate the occurrence of UTI is the use of certain powerful antibiotics.

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It is therefore important to avoid the predisposing factor to these infections. Strong antimicrobial products are discouraged for uses as they also upset the balance of the normal body flora. Proper hydration is important in combating issues of rehydration and ensuring the correct pH of the GU. The hydration also aids in the flushing of the GU tract hence minimizing the formation of microbial colonies.

### Diagnosis

The initial complaints presented suggested flu infection. Further physical examination indicated malnutrition which was corrected by nutrition intervention with therapeutic prescription of the F-100 at a dosage of 130ml/kg/day until the weight of the patient increases. The expected weight increase is 10g/day. The nutritional supplementation is continued until the nutritional status of the child increases.

Further examination suggested upper respiratory tract infection. This was established the flu-like symptoms and the physical examination and subsequent revelation of symptoms of dehydration and the presence of an otitis media all suggested common cold. The laboratory results in the urine sample confirmed urinary tract infection. The final diagnosis, therefore, was upper respiratory tract infection with urinary tract infection. Treatment commenced by prescription of acetaminophen at 10-15mg/kg orally at an interval of 4-6 hour and  $\leq 5$  doses per day and inhalant decongestants. Dextromethorphan was also prescribed for 5ml/6-8hrs as necessary to combat the cough. Nitrofurantoin at 50mg/ 4hours and should be administered with food.

It is, however, important to know the social and economic factors that might influence the spread of these infections (Flores-Mireles, Walker, Caparon, & Hultgren, 2015). Different people have different social status. these determine to a greater extent the nutrition status of the patients and consequently the immunity of the patient.

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