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Case Report Open Access

Immune Complexes-Like Disease in the Course of Enterobacter cloacae sepsis Due to Cholelithic Cholecystitis, Preceded by Influenza Vaccination

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Summary

The authors present a case of a male who, a week after influenza vaccination presented with abdominal symptoms – pain in the right epigastrium followed by pyrexia, muscle pain, disturbed liver and kidneys function as well as consciousness disorders. Immune complex-like disease and Enterobacter cloacae sepsis due to cholelithic cholecystitis were diagnosed. In this case, the suspected correlation between vaccination and immune complex–like disease resulted mainly from two reasons–the onset of symptoms after few days after vaccinations and clinical improvement after plasmaferesis. In etiopathogenesis of this specific case the similar immunogenicity of vaccine compounds and Enterobacter cloacae antigens, and patient genetic predisposition should be considerated.

Description

A patient (52), with previous history of arterial hypertension, reported to the Emergency Room due to fever up to 39°C for seven days accompanied by headache, vomiting and jaundice. From the onset of the symptoms he took oral clarithromycin with no improvement, and then was switched to amikacin intramuscularly. He also reported passing dark urine and fits of dry cough, denied alcohol or paracetamol overdose. He ate mushrooms seven days prior to admittance. A week before the onset of the disease he had flu vaccination. No foreign travels over the last year. One year history of discomfort in the right epigastrium.

Physical examination revealed excessively warm skin, jaundice, tenderness to palpation in the right epigastrium with positive Chełmoński sign, no peritoneal signs. Allopsychic orientation incomplete – patients showed defects of the fresh memory.

Lab tests showed increased activity of aminotransferases (AST 3004 U/l, ALT 4182 U/l), elevated concentration of bilirubin (8,3 mg/dl) with direct bilirubin prevalence (7,75 mg/dl), GGT (162 U/l), creatinine (3,08 mg/dl), CPK (603 U/l), procalcitonine (3,65 ng/ml), ferritine (>100.000 ng/ml), d-dimers (6,52μg FEU/ml), depleted number of platelets (75x10^3/μl) and leucocytes 2,81x10^3/μl) as well as normal values of INR [1,2], albumins (3,2 g/dl) and CRP (3,86–5,11 mg/l). Tests for hepatotropic viruses (HBs, HCV and CMV) were negative. The repeated abdominal ultrasound showed evidence of an acute cholelithic cholecytitis, and small amount of free liquid in the peritoneum and around the gall bladder. The cardiac ultrasound was normal. Toxic injury of the liver (paracetamol, occupational factors – work in a car service) was ruled out. The impact of the vaccination was taken into consideration. The blood culture was positive for Enterobacter cloacae. Patient received an antibiotic according to the antibiogram.

Regarding the whole course of the disease, with unproportionally increased biochemical parameters and relatively good general condition of the patient and well preserved liver function as well as a two fold decrease in amintransferases activity after administration of i.v. steroids for initially suspected toxic defect, a suspicion of septicaemia with immune complexes disease was stated. Regarding the surgeon's consultation, after three days in the Medical Ward the patient was transferred to the Surgery Department for surgery of the cholelithic cholecystitis.

The gall bladder with some inflammatory infiltration was removed and Kehr's drain was implemented into the normal biliary duct, which runs no bile. In the course of the operation cholelithic cholecystitis was confirmed with hard, infiltrated liver and liver hilar lymphadenopathy. The patient was stable during the procedure with no cardio– pulmonary incidents but after the surgery prolonged respiratory insufficiency occured.

After the procedure patient was transferred to Intensive Care Unit. During his stay in the unit–apart from standard therapy–plasmaferesis was performed for three consecutive days, leading to gradual normalization of the renal and hepatic function excluding cholestatic parameters, with increase in GGT (482 U/l) and bilirubin (14 mg/dl), direct bilirubin prevailing.

The general condition of the patient and his cardio–respiratory function gradually improved, biliary leaks receded (cholangiography via Kehr's drain, abdominal CT scan) as did the cholestasis (bilirubin 7,0 mg/dl). The patient was transeferred to the General Surgery Department in Nysa. By that time the biliary duct prosthesis was endoscopically inserted and the duct was decompressed. During the stay fever reoccured with no laboratory deterioration – due to subphrenic abscesses that required reoperation.

The patient recovered totally, after 8 weeks the prosthesis was removed, lab tests normal. During the disease his weight fell by 11 kg.

Discussion

The probable initial causal factor for the pyrexia was an exacerbation

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of the chronic cholecystitis, although due to oral antibiotic therapy it's symptoms could have been uncharacteristic.

On admission patient presented with symptoms of immune complexes-like disease and multiorgan injury that initially masked the signs of cholecystitis.

At the beginning the toxic causes (paracetamol, fungi, occupational factors) or the the influenza vaccination were taken into consideration. Although, inadequatly high activity of aminotransferases compared to normal liver function (e.g. normal INR) and renal defect as well as improvement of general condition and biochemical parameters after administration of steroids led to diagnosis of sepsis with a starting point in the gall bladder, complicated by immune complexes disease. Blood cultures showed Gram negative bacteria Enterobacter cloacae and significant improvement in the postoperative period was achieved after plasmaferesis.

The Gram negative bacteriemia with onset in the abdominal cavity may lead to immune complexes disease with crescentic glomerulonephritis [1] which could occur in the reported case. The occurence of immune complexes during sepsis has been described in literature [2,3].

Theoretically three options can be considered:

1. The influenza vaccination could have induced the immune complexes-like disease in course of which an exacerbation of chronic cholecystitis occured.
2. The influenza vaccination induced an exacerbation of chronic cholecystitis followed by septicaemia and immune complexes-like disease.
3. Casual coincidence of vaccination and the exacerbation of cholecystitis followed by septicaemia and immune complexes-like disease in it's course.

The question about the initiating factor – be it vaccination inducing the immune complexes-like or cholecystitis with immune complexes-like disease in the course of sepsis – will remain unanswered. Regarding the fact that flu vaccination can be complicated by serum sickness or serum sickness-like disease [4,5,6], the impact of the vaccination on the clinical course of the reported case cannot be ruled out. The possibility of serum sickness symptoms occurrence after another vaccinations is reported in literature [6-15]. Immune complex deposition and adjuvant effects are potential pathogenic mechanisms of such immune complex-like diseases [8,16,17].

In this case, the suspected correlation between vaccination and immune complex–like disease resulted mainly from two reasons– the onset of symptoms after few days after vaccinations and clinical improvement after plasmaferesis. In etiopathogenesis of this specific case the similar immunogenicity of vaccine compounds and Enterobacter cloacae antigens [18], and patient genetic predisposition [19] should be considerated.

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