Hip Arthroplasty in a 101-Year-Old Patient

To the Editor:

There in an increasing prevalence of hip arthroplasty procedures for hip fractures in patients over the age of 80. We describe the oldest living patient to undergo such an intervention. Subsequently, she was able to return to an independent home living environment, thus reinforcing the need to perform hip arthroplasties on patients of extreme age.

Mrs. M is a 101-year-old Hispanic woman who was admitted with a right hip fracture resulting from a fall. On admission, her examination was unremarkable except for systolic hypertension, a systolic ejection murmur, and a healing scar over the hip. Laboratory analysis revealed mild anemia with a Hgb of 10.7 g/dL. She was cleared for surgery by the cardiology service. She underwent a cemented bipolar hemiarthroplasty procedure without any intraoperative events. Postoperatively, she experienced a period of pulselessness of approximately 2 minutes requiring intubation and 2 minutes of chest compression before returning to normal sinus rhythm. On the fourth postoperative day, she went into atrial fibrillation for which she was medically converted to sinus rhythm. After improving, she was transferred to rehabilitation with the long-term goal of returning her to her previous independent level of functioning. Three weeks after admission, our highly motivated patient returned home with a full range of motion in her hip. Currently, she is in good health 8 months after discharge, ambulating at her home where she resides independently at the age of 102.

Arthritis and fractures of the hip led to 120,000 total hip arthroplasties in 1990.[1] As the US population ages, there will be a growing need for reconstructive joint surgery.

A number of studies have investigated outcomes of hip arthroplasty in the elderly. Chang et al[2] concluded that total hip arthroplasty for osteoarthritis of the hip can be cost-effective in improving quality-adjusted life expectancy. This cost-effectiveness ratio increases with age and is higher for men than for women. Brander et al[3] followed a sample of 43 octogenarians, of whom 95% were able to negotiate stairs independently after surgery. Levy and associates[4] showed that 90% of these patients remain community walkers after hip arthroplasty. In contrast, Newington and associates[5] reported that this same population had a higher incidence of complications with a mortality rate of 4%.

The more recent reports tend to agree more with the conclusions of Chang et al and Brander et al that hip arthroplasty is a cost-effective, reliable, and durable procedure useful in maintaining independence in elderly patients over 80 years old.[6,7]

The expected time of survival for a person who is 80 years of age is 6.3 to 7.7 years.[8] We feel that despite the high rate of complications in the early postoperative period and the long rehabilitation time, there are sufficient data justifying the use of hip arthroplasty in patients older than 80 years. Advanced age alone should not be a contraindication. Mrs. M is reported to be the oldest patient to ever have bipolar hip arthroplasty at 101 years of age. Eight months after her surgery, our patient is doing well, is active, and is living independently once again.

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Anti-Tumor Necrosis Factor Therapy Is Tolerated in an Individual With Homozygous Complement C2 Deficiency

To the Editor:

After reading the case report about drug-induced lupus after treatment with infliximab in rheumatoid arthritis in the *Journal of Clinical Rheumatology* by Benucci et al,[1] we would like to add to this interesting dialogue with the following case.

The genetic deficiency of complement C2 may be seen in its homozygous or heterozygous forms. It has been associated with autoimmune diseases, including immune thrombocytopenic purpura (ITP), juvenile chronic arthritis (JRA), and systemic lupus erythematosus (SLE).

Use of anticytokine therapy has been associated with the development of autoantibodies and autoimmune disease. The expanding role for incorporating anticytokine therapy into disease management protocols suggests that patients with autoimmune disease associated with C2 deficiency may be exposed to agents designed to block tumor necrosis

factor-alpha (TNF-α). The effect of anticytokine therapy in C2-deficient individuals is currently not known. In particular, there are no data as to whether anti-TNF-α treatment could compound the preexisting autoimmune propensity conferred by the presence of C2 deficiency. We report a case of a patient with ITP, JRA, and C2 deficiency who improved on infliximab then etanercept treatment and who does not appear to be developing any lupus-like syndrome during therapy.

A 26-year-old woman with a history of JRA was originally diagnosed with ITP at age 9 when she developed nosebleeds associated with a low platelet count. Periodically during her childhood, the patient was treated with glucocorticoid therapy because of this problem.

At age 10, the patient first noted morning stiffness and swelling in her ankles and left knee. She was then diagnosed with JRA. Laboratory results at that time revealed a low-titer ANA. From the age of 14 to 18, the patient was treated with hydroxychloroquine. During this time, she had minimal rheumatologic complaints with only occasional swelling in her fingers and in her wrists. At age 17, she experienced an episode of uveitis. At age 24, the patient's therapy was switched from hydroxychloroquine and prednisone to minocycline. Over the next 1 year, the patient remained free of significant inflammatory joint symptoms.

At age 25, the patient experienced a flare of her disease with swelling of the ankles and knees. At that point, she was started back on the hydroxychloroquine and prednisone and initiated a standard infliximab infusion protocol. Overall improvement in joint symptoms, including a reduction in swelling, was observed.

The physical examination revealed a partial frozen left shoulder, right elbow contracture, decreased wrist movement, limited flexion of the left knee, and no synovitis. There were no cutaneous stigmata of vasculitis. There was no evidence of micrognathia, splenomegaly, malar rash, mucositis, or alopecia.

Laboratory testing revealed an ANA in a titer of 1:160 with negative associated antibodies to ds-DNA, RNP, Smith, SSA, and SSB. Kidney function was normal by blood and urine testing. The total hemolytic complement CH50 was 18 units (normal, 26–58). Subsequent testing demonstrated that the C3 and C4 levels were normal, but the C2 level was not detectable on repeat assays.

A year later, she developed hives, itching, and shortness of breath during infliximab infusion therapy; therefore, it was stopped. She then experienced flareup of her disease with swelling of both knees. At that point, she was started on 25 mg etanercept twice a week with no recurrence of arthritis manifestations.

Thirteen months of follow up on 10 mg methotrexate per week, 1 mg folic acid orally per day, and 25 mg etanercept subcutaneously twice a week has revealed no disease activity, sign of sepsis, or systemic lupus. Repeated assay after 2 years treatment with anti-TNF-α showed negative antibodies to ds-DNA and normal C3, C4 level.

Anti-TNF-α therapies are promising new strategies in the treatment of rheumatoid arthritis (RA). Despite good clinical efficacy and tolerance, the possible occurrence of drug-induced autoimmune disorders remains a matter of concern. Induction of antinuclear (ANA) and anti-DNA antibodies is observed in some patients treated with TNF-α inhibitors (anti-TNF-α antibodies) or soluble TNF-α receptor. Of concern is the possibility of induction of true lupus erythematosus by TNF blockers.

According to the safety data on infliximab, 63.8% of patients with RA newly develop positivity for ANA during infliximab treatment, and 13% of infliximab-treated patients with RA develop positivity for anti-ds-DNA antibodies.

Case reports exist relating individuals treated with infliximab and etanercept who developed systemic lupus-like syndrome. Patients' symptoms included skin rash, arthritis, thrombocytopenia, lymphopenia, serositis, abnormal liver function, and positive serology for ANA and ds-DNA antibodies within the initiation period of therapy. Interestingly, all signs of lupus abated after treatment cessation.[1,2]

Charles et al reported positive anti-ds-DNA in 22 of 156 patients (14%), but only 1 patient developed clinical symptoms and signs compatible with a drug-induced lupus syndrome. The conversion to seropositivity for the ANA was 29% to 53% in the pre- versus post-treatment patients.[3] Leen De Rycke et al reported 7 of 62 patients (11.3%) of the patients with RA treated with infliximab had IgM and IgA anti-ds-DNA at week 30. However, no anti-ds-DNA IgG antibodies or lupus symptoms were observed during the period of observation in this study.[4]

C2 deficiency is the most common homozygous complement deficiency and is found in 1 of 10,000 to 20,000 individuals. One third to one half of patients with homozygous C2 deficiency present with an illness resembling SLE.[5,6]

In the present report, our patient has C2 deficiency in the setting of major autoimmune manifestations (JRA, ITP). By virtue of her genetic abnormality, she remains susceptible to other autoimmune diseases such as SLE. Thus far, with the use of infliximab and then etanercept, our patient has not had lupus-like symptoms and has had continued control of her arthritis. This observation suggests that anti-TNF-α may not be deleterious to individuals with C2 deficiency. We suggest that further studies needs to be conducted on such individuals with regard to the safety and efficacy of anti-TNF-α therapy.

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Coxopathy in Congenital Afibrinogenemia

To the Editor:

Congenital afibrinogenemia is a rare disease associated with hemostatic disturbances and coagulation abnormalities. The condition is classified as an autosomal-recessive disease caused by congenital absence of fibrinogen in the blood. The tests performed to evaluate hemostatic functions in patients with congenital afibrinogenemia reveal prolonged bleeding time (with failure of blood to clot) and abnormal platelet aggregation. Signs of frequent bleeding include subcutaneous hematomas, epistaxis, bleeding gingivae, intramuscular bleeding, or bleeding into the gastrointestinal tract. Sometimes excessive bleeding occurs immediately after birth after cutting the umbilical cord. According to the available literature, involvement of the bones and joints has been reported only in 3 od 49 patients with afibrinogenemia (out of 49).[1,2] Bone changes occurred in the form of geodes in metaphyses and diaphyses, especially in the long bones. The geodes were usually diagnosed as pseudocysts with a fibrous wall; most frequently they were found in the middle of the bone marrow and developed as a result of intraosseous bleeding.

We describe development of coxopathy in a 13½-year-old boy with afibrinogenemia. The patient was repeatedly hospitalized in The Clinic for Children and Youth at the Faculty Hospital in Martin in The National Institute of Rheumatic Diseases in Piešťany and in the University Department of Orthopaedic Surgery Children's Hospital, Bratislava, Slovakia. The medical history of our patient includes numerous occurrences of hemorrhage. After birth, the child was immediately hospitalized in the hematology clinic as a result of excessive bleeding after cutting the umbilical cord. As a newborn, skin hematomas were observed frequently. When he was 1 year old, he underwent surgery as a result of epidural hematoma. Then, during the period of baby teeth eruption, bleeding from the gums was observed. At the age of 3, when he was treated for bronchopneumonia, an episode of epistaxis occurred. Later, bleeding into the skin, skeletal muscles of the upper and lower extremities, as well as from the soft palate were noticed frequently after minor mechanical injuries.

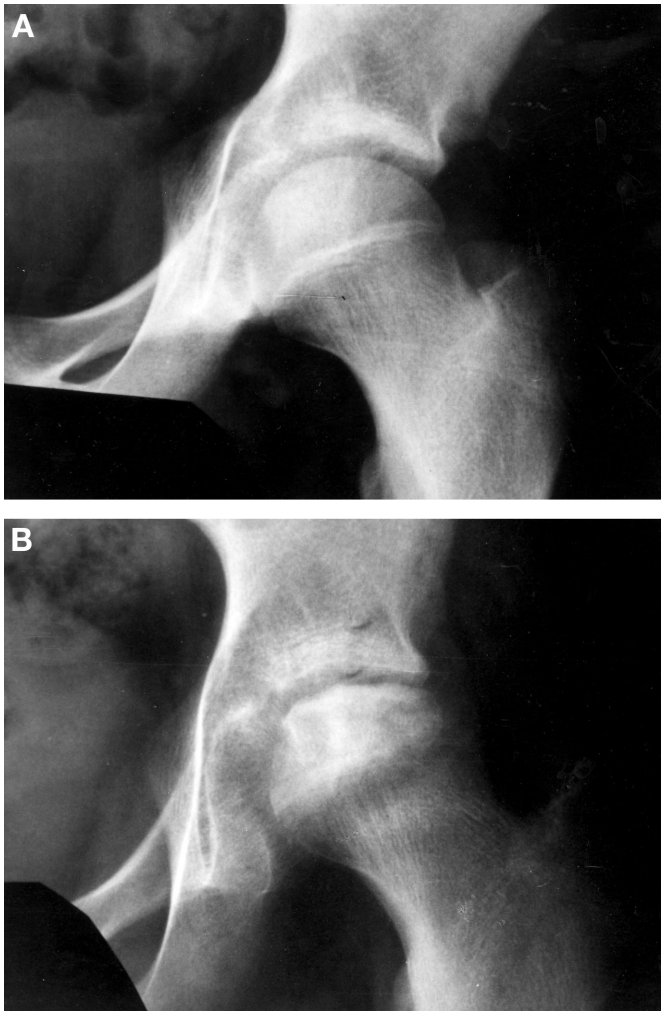

FIGURE 1. (A) Healthy left hip joint, 2001. (B) Periarticular osteoporosis, mild craniolateral narrowness of articular space, flattened surface of femoral head with 2 shallow defects, and subchondral cystic radiolucent zones in femoral head surrounded with osteosclerosis, 2002.

In 1999, when diagnosed with tonsillitis, our patient experienced neck lymphadenitis accompanied by bleeding into lymph nodes and the sternocleidomastoid muscle. At that time, 2 g of fibrinogen was administered intravenously. In 2001, when diagnosed with a hematoma to the left inguinal area, and later, in the same year, when treated for swelling of the mandible, 2 g of fibrinogen was administered intravenously again. In the end of July 2002, the patient was treated for varicella; approximately 1 day before appearance of rash, he had discomfort in his left groin. The patient's difficulties reappeared in August 2002 after he recovered from varicella. He reported pain in his left groin; later his pains were radiating to the entire left hip area. After administration of 2 g of fibrinogen, his condition improved temporarily. However, at the end of November 2002, his mother noticed that he was limping. In December 2002, the pain reappeared and the patient developed limited mobility of the left hip joint. Ultrasonography on December 11, 2002, showed that the right joint cavity was 2 mm wide and the capsule of the femoral head had sharp contours; it was thin and its continuity was well delineated. In the left hip joint, the joint space was 4 mm wide, fluid was minimal, and the joint capsule was thicker compared with the right side; it was fibrous, irregular, and more echogenous under the fovea capitis femoris. Perthes disease was suspected.

On December 18, 2002, scintigraphic examination of the hip joints was performed. In the first phase, after osteotrophic radiosubstance was administered by bolus technique, no increased flow was observed. In the venous phase, slightly increased flow was shown in the left hip joint when compared with the right hip joint. The total body scintigraphy, 3 hours after the injection, detected osteoblastic activity in the area of the left femoral head. The rest of the skeleton showed regular, homogenous metabolism of the radiosubstance. The x-ray pictures did not show any abnormalities of the right hip joint. In the left hip, x-ray confirmed suspected osteonecrosis (Fig. 1). Computed tomography examination of the left hip joint revealed fragmentation of the femoral head with articular fluid and thickened articular capsule. We can conclude that our patient developed bleeding, or combination of bleeding and thrombosis, which, consequently, led to the necrosis of the femur. Barnett and Graham[3] reported bleeding as a potential complication of the treatment with fibrinogen; Peter et al[4] report not only bleeding, but also thrombosis in internal organs after treatment with fibrinogen.

In our patient, varicella-associated arthritis might also have contributed to the development of the avascular necrosis, although there had been some inguinal pain before the varicella. In the review by Fierman,[5] 20 cases of varicella-associated arthritis were reported. The arthritis was monoarticular, involving mainly the knee joints (14 patients). Other affected joints included the ankles (3 patients), the shoulder (2 patients), the hip (1 patient), the wrist (1 patient), and the small joints of the hands (1 patient) or feet (1 patient). The arthritis was monoarticular in 15 patients. In most of the children, the arthritis was probably the result of the direct invasion by varicella virus. Priest et al,[6] Evers et al,[7] and Fink et al[8] isolated a virus from the synovial fluid in one of the affected patients. In patients with bacterial complications, the arthritis was caused by bacterial invasion probably through blood from the varicella-infected skin.[9] It is important to differentiate the viral arthritis from the septic arthritis—a well-known complication of varicella.[10] Involvement of the hip joint in the patient with septic varicella was described by Messaritakis et al.[11]

Other etiology of the development of avascular necrosis in our patient could not be identified (eg, coxopathy at birth, metabolic disease, diffuse disease of connective tissue, and so on).

In conclusion, we would like to point out that congenital afibrinogenemia may be associated with the development of osteonecrotic coxopathy. In our study, the development of osteonecrosis may be attributed to a combination of several factors: varicella infection as a possible triggering factor, occurrence of bleeding, and, possibly, development of thrombosis after treatment with fibrinogen.

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