CLINICAL VIGNETTE

Mycobacterium chelonae Olecranon Bursitis Infection

Stephen C. Ross, M.D.

Case Report

A 67-year-old man with a history of hypertrophic cardiomyopathy and hyperlipidemia presented initially with a one-week history of right elbow swelling. Prior to the swelling, he had an episode of moderate trauma to the right arm and elbow while body surfing in the Santa Monica Bay. He had no history for any immunocompromised condition and was not on any immune-suppressive treatments and was HIV negative. He was afebrile with normal vital signs. Pertinent physical findings were focused on the right upper extremity, including fluctulance of the olecranon bursa with mild swelling of the forearm. Muscle strength and sensation of the extremity were intact. The presumptive diagnosis was olecranon bursitis, and he had aspiration of 10cc of serous sanguineous fluid and injection of triamcinolone 20 mg. One week later, he returned with re-accumulation of fluid in the right olecranon bursa. A second aspiration of synovial fluid was sent for culture. Right forearm and right elbow x-rays after aspiration revealed soft tissue edema posterior to the olecranon and increased soft tissue thickness posterior to the olecranon containing foci of gas and a focus of calcification. The fluid culture returned positive for Mycobacterium chelona with pending antibiotic sensitivities. He was sent for infectious disease consultation and started on ciprofloxin, azithromycin, and rifampin. Once the identification and susceptibilities were known, the therapy was changed to linezolid 600 mg bid and azithromycin 500 mg daily (Table 1). After four weeks of therapy with the two oral antibiotics, he developed progressive weakness and nausea. Repeat CBC revealed anemia with Hemoglobin of 9.5 g/dl and thrombocytopenia with a platelet count of 85,000. Under the advice of infectious disease, the antibiotic treatment with linezolid and azithromycin was stopped after six weeks. Follow-up examination showed resolution of the olecranon swelling and forearm induration. Follow-up ESR and C-reactive protein were normal. The patient had no evidence of any other mycobacterium infection.

Discussion

The patient presented with a very rare form of infectious olecranon bursitis. Mycobacterium chelonae (M.chelonae) is in the classification of rapidly growing mycobacterium (RGM), which also includes Mycobacterium fortulim and Mycobacterium asbscessus. The RGM usually grow in subcultures within one week compared to other mycobacteria, which was the case with this patient.[1]

M. Chelonae is found worldwide and is ubiquitous in the environment and has been found in soil, water, sewage, and dust particles.[2] It is a cause of localized skin lesions including surgical wounds and also disseminated disease. In surgical wounds, the source often is contamination from colonized tap water and contaminated tissue-marking pens.[3] Other localized infection with M. chelonae include isolated lymphadenitis, osteomyelitis, joint infections, eye disease, and pulmonary infection.[4] M. chelonae infections have also been found following total joint replacements in both knee and hip joints.[5]

In this specific case, the most likely exposure was in the Pacific Ocean and trauma to the right arm and elbow is the likely portal of entry. What makes this case more unusual is that M. chelonae, in contrast to the other RGM, primarily causes human infections in immunosuppressed patients, particularly HIV patients, and our patient had normal immunity.[6] Most likely the initial entry was the right forearm and then eventually spread to the olecranon bursa.

M. chelonae lesions usually present as red-to-violaceous nodules, which may be painful and then progress to cellulitis and eventually can form an abscess or an ulcer. Localized adenopathy can be found, but constitutional symptoms such as fever, fatigue arthralgia, and myalgia are not present. Disseminated disease can progress from skin or soft tissue lesions but almost exclusively occur in immunosuppressed patients. However, anyone with even localized infection should be screened for HIV or other immune disorders.[7]

Treatment for M. chelonae infections can be difficult because the bacteria can be resistant or only partially susceptible to many antibiotics. Oral clarithromycin had been the mainstay of treatment but with the emergence of macrolide resistant organisms multidrug treatment regimens must be determined for each patient. No controlled clinical trials of treatment comparing one form of treatment with another or with no treatment at all have been performed.[8,9] Most treatment recommendations are based on case series and organism sensitivities but at least two agents are recommended. For severe infection with M. chelonae, initial two agent parental treatment is recommended for two to six weeks and then followed by oral therapy with two agents. Also, length of treatment with oral agents has not been clinically determined but recommendations are four months for localized skin and soft tissue, 6 months for bone infection, and 12 months for lung infections. In prosthetic joint infections IV antibiotics up

to 6 months are sometimes recommended.[10] In our case, treatment was stopped secondary to medication side effects. There was no evidence for recurrence.

Surgery is indicated with extensive skin disease, abscess formation, or when antibiotic therapy is difficult of ineffective. Removal of surgical prosthesis or implants is necessary for cure. Surgical resection of limited pulmonary disease may be curative.[11]

Conclusion

Mycobacterium chelonae as illustrated in this case is a very rare form of infectious olecranon bursitis. However since the bacteria exist in multiple environments worldwide, one must be suspicious of the agent as a cause of recalcitrant infections of the olecranon bursa, as well as other soft tissue infections. It is not unusual for there to be a lag time of up to two years from time of initial inoculation with the mycobacterium and eventual diagnosis.

Table

Table 1. Antibiotic Sensitivities of Mycobacterium Chelonae Culture.

MYCOBACTERIUM CHELONAE GROUP
MIC in mcg/mL
AMIKACIN: 16S
CEFOXITIN: >256R
CIPROFLOXACIN: >2R
CLARITHROMYCIN: 0.25S
DOXYCYCLINE: >64R
IMIPENEM: 16R
LINEZOLID: 4S
MOXIFLOXACIN: 8%
RIFAMPIN: >2%
SULFAMETHOXAZOLE: >64R
TOBRAMYCIN: S
TIGECYCLINE: <=0.25 %

REFERENCES

1. **Woods GL, Washington JA 2nd**. Mycobacteria other than Mycobacterium tuberculosis: review of microbiologic and clinical aspects. *Rev Infect Dis*. 1987 Mar-Apr;9(2):275-94. Review. PubMed PMID: 3296098.
2. **Larson J, Gerlach SY, Blair JE, Brumble LM, Jorn HKS, Thompson KM**. Mycobacterium chelonae/abscessus infection caused by a bird bite. *Infect Dis Clin Pract* 2008; 16:60-6.
3. **Terry S, Timothy NH, Zurlo JJ, Manders EK.** Mycobacterium chelonae: nonhealing leg ulcers treated successfully with an oral antibiotic. *J Am Board Fam Pract*. 2001 Nov-Dec;14(6):457-61. PubMed PMID: 11757889.
4. **Wagner D, Young LS**. Nontuberculous mycobacterial infections: a clinical review. *Infection*. 2004 Oct;32(5):257-70. Review. PubMed PMID: 15624889.
5. **Lee RP, Cheung KW, Chiu KH, Tsang ML**. Mycobacterium chelonae infection after total knee arthroplasty: a case report. *J Orthop Surg* (Hong Kong). 2012 Apr;20(1):134-6. PubMed PMID: 22535831.
6. **Nathan DL, Singh S, Kestenbaum TM, Casparian JM**. Cutaneous Mycobacterium chelonae in a liver transplant patient. *J Am Acad Dermatol*. 2000 Aug;43(2 Pt 2):333-6. PubMed PMID: 10901715.
7. **Centers for Disease Control and Prevention (CDC).** Mycobacterium chelonae infections associated with face lifts--New Jersey, 2002-2003. *MMWR Morb Mortal Wkly Rep*. 2004 Mar 12;53(9):192-4. Erratum in: MMWR Morb Mortal Wkly Rep. 2004 Mar 26;53(11):246. PubMed PMID: 15017374.
8. **Swenson JM, Wallace RJ Jr, Silcox VA, Thornsberry C.** Antimicrobial susceptibility of five subgroups of Mycobacterium fortuitum and Mycobacterium chelonae. *Antimicrob Agents Chemother*. 1985 Dec;28(6):807-11. Erratum in: Antimicrob Agents Chemother 1986 Apr;29(4):720. PubMed PMID: 4083863; PubMed Central PMCID: PMC180333.
9. **Wallace RJ Jr, Brown-Elliott BA, Ward SC, Crist CJ, Mann LB, Wilson RW**. Activities of linezolid against rapidly growing mycobacteria. Antimicrob Agents Chemother. 2001 Mar;45(3):764-7. PubMed PMID: 11181357; PubMed Central PMCID:PMC90370.
10. **Wallace RJ Jr, Swenson JM, Silcox VA, Bullen MG**. Treatment of nonpulmonary infections due to Mycobacterium fortuitum and Mycobacterium chelonei on the basis of in vitro susceptibilities. *J Infect Dis*. 1985 Sep;152(3):500-14. PubMed PMID: 3875667.
11. **Griffith DE, Aksamit T, Brown-Elliott BA, Catanzaro A, Daley C, Gordin F, Holland SM, Horsburgh R, Huitt G, Iademarco MF, Iseman M, Olivier K, Ruoss S, von Reyn CF, Wallace RJ Jr, Winthrop K; ATS Mycobacterial Diseases Subcommittee; American Thoracic Society; Infectious Disease Society of America**. An official ATS/IDSA statement: diagnosis, treatment, and prevention of nontuberculous mycobacterial diseases. *Am J Respir Crit Care Med*. 2007 Feb 15;175(4):367-416. Review. Erratum in: Am J Respir Crit Care Med. 2007 Apr 1;175(7):744-5. Dosage error in article text. PubMed PMID: 17277290.

Submitted November 30, 2015