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Rheumatoid Arthritis Masked by Docetaxel Chemotherapy in a Patient With Ovarian Carcinoma

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The taxanes (paclitaxel and docetaxel) are antimicrotubule agents used in the treatment of breast and ovarian cancers. Taxanes promote regression of collagen-induced arthritis in both animal models and humans by inhibiting proliferating synoviocytes. We report a case of rheumatoid arthritis suppressed by the administration of docetaxel-based chemotherapy.

In October 2006, a 66-year-old woman presented to the hospital with symptoms in multiple joints that began 4 weeks after she had completed chemotherapy for ovarian cancer. She complained of pain, swelling, and stiffness in her hands and wrists bilaterally, as well as in her right elbow, left shoulder, and bilateral knees and ankles. She noted morning stiffness lasting approximately 2 hours and diminished grip strength. In June 2006, the patient had been diagnosed with ovarian carcinoma and had been treated with surgery, followed by adjuvant chemotherapy with docetaxel (60 mg/m²) and carboplatin dosed every 3 weeks for 4 cycles. Chemotherapy had ended in September 2006. The patient reported that her articular symptoms first began 6 months before her diagnosis of cancer, and had progressively worsened. Strangely, both her pain and stiffness had improved dramatically for the duration of her chemotherapy treatments, only to reappear again 4 weeks after the final cycle of chemotherapy.

At presentation, she had swelling and tenderness in the metacarpophalangeal, proximal interphalangeal, and carpometacarpal joints bilaterally, as well as in multiple other joints. Laboratory studies showed a normocytic anemia, an erythrocyte sedimentation rate of 84 mm/h, and a C-reactive protein of 31 mg/L. Plain radiographs of the hands demonstrated symmetrical synovial thickening and joint space swelling involving the wrists and small joints of the hands. Rheumatoid factor was 673 IU/mL (normal <10 IU/mL), and an anticyclic citrullinated peptide level of 369 U/mL (normal <20 U/mL). A diagnosis of new-onset rheumatoid arthritis masked by concomitant docetaxel chemotherapy was made, and the patient was started on nonsteroidal anti-inflammatory drugs, corticosteroids, and sulfasalazine. Over the next 3 months, she showed a modest symptomatic and functional improvement.

Docetaxel and paclitaxel are diterpenes extracted from the bark of yew trees of the genus *Taxus*. These agents, collectively known as taxanes, are used in the treatment of breast and

ovarian cancer because of their ability to block the organization of the microtubule cytoskeleton during mitosis, inhibiting cell division. Because of their antimicrotubule properties, taxanes can also suppress cell migration, chemo-taxis, and adhesion.

Outside of their role in cancer therapy, taxanes are potentially useful agents in rheumatoid arthritis because of their inhibitory effects on synovial cells. Because synoviocyte proliferation and pannus formation are the pathologic hallmarks of rheumatoid arthritis, taxanes represent a plausible therapy for this condition. To this end, paclitaxel has been shown to arrest mitosis and cell proliferation in cultured synoviocytes from both animals¹ and humans.² In addition, paclitaxel prevents the formation of collagen-induced arthritis in rats and induces clinical regression of existing arthritis.³ To date, there has only been one account of human rheumatoid arthritis improving with taxane therapy. In that report, a 38-year-old woman with longstanding rheumatoid arthritis showed an unexpected and marked amelioration in her arthritic symptoms while receiving paclitaxel chemotherapy for breast cancer.⁴ Although taxanes have been previously proposed for the therapy for human rheumatoid arthritis, clinical trials in this area are lacking, perhaps, because of the toxicity profile of these agents. Optimal concentration, dosing intervals, administration route, duration of therapy, cost, safety, and evaluation of side effects have never been investigated in rheumatoid arthritis patients. A phase II clinical trial evaluating paclitaxel in rheumatoid arthritis is currently underway.⁵

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