

Primary lung cancer presenting as foot pain

Cautionary case report

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Orthopedic problems are a common presentation in primary care, accounting for roughly 10% of all office visits; foot concerns make up about 10% of these orthopedic problems.¹ While often distressing to the patient, the eventual diagnosis does not usually signal a life-threatening illness. This report, however, describes the relatively rare phenomenon of acrometastasis of primary lung cancer to the foot as a presenting concern.

Case

A 63-year-old male patient, who had a 120-pack-year history of cigarette smoking, presented in late August 2014 with a 1- to 2-month history of pain in the right foot. He initially reported that the pain was present on awakening, with improvement as the day wore on and a gradual return later in the day. He had been taking 200 mg of over-the-counter naproxen as needed for the pain, with some relief. The initial examination findings did not reveal any skin changes or worrisome features. (A review of the initial x-ray scan 3 weeks later did suggest the presence of a lucent lesion.) There was some tenderness noted along the lateral aspect of the foot close to the base of the fifth metatarsal. The patient's history was relevant for α_1 -antitrypsin deficiency and chronic obstructive pulmonary disease, for which he was using an inhaler regimen. While he had no evidence of liver disease, his obstructive lung disease had progressed over the previous 3 years to the point at which he could no longer manage the demands of his work. The patient was diagnosed with plantar fasciitis and was prescribed 375 mg of naproxen 3 times daily and given plantar stretching exercises. Follow-up was arranged as needed.

The patient was seen 2 weeks later. When asked about his foot pain he reported that despite the exercises and naproxen, his foot had continued to bother him. In the meantime, the patient had consulted a physician friend, who had diagnosed him with gout and had prescribed 50 mg of indomethacin 3 times daily, which the patient found very helpful. Physical examination findings revealed some redness and tenderness over the base of the fifth metatarsal. The patient was instructed to continue taking the indomethacin. A complete blood count and uric acid measurement were ordered at this time.

Results of the bloodwork revealed his uric acid level was 378 $\mu\text{mol/L}$ (normal range 210 to 420 $\mu\text{mol/L}$) and his hemoglobin level was 139 g/L, down from 148 g/L as measured 6 months previously. Red blood cell indices were normal. At this follow-up visit the patient reported very little subsequent benefit from the indomethacin. His only relief came from limitation of weight bearing on the foot. He had no history of rectal bleeding or changes in bowel habit to explain the drop in hemoglobin. He gave no history of night sweats, weight loss, or any other constitutional symptoms. He had no progression of cough or dyspnea. The physical examination findings were essentially unchanged, with tenderness over the base of the metatarsal. A decision was made to stop the indomethacin and a stool sample for occult blood testing was ordered to check for gastrointestinal blood loss. A nuclear medicine scan of the foot was ordered and the patient was advised to limit weight bearing as much as possible.

In the meantime, the patient consulted his physician friend again. The friend had suggested that he might benefit from a below-knee walking cast, which was subsequently applied on the supposition that this was an occult fracture. During the fifth visit an orthopedic surgeon was consulted by telephone. Although he concurred with the probable diagnosis of stress fracture, he suggested measuring

EDITOR'S KEY POINTS

- Family physicians usually deal with familiar presentations of disease and thereby become experts in recognizing the patterns of these presentations. However, family physicians also need to be alert to atypical features of common presentations. Diagnosis is often an evolving process and follow-up is essential.
- While bone metastases of primary lung cancers are not uncommon, acrometastases—metastases to the hands or feet—are rare. Acrometastasis as the presenting feature of a primary cancer is even more unusual. Cancers presenting with foot metastasis do not carry a good prognosis.



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the patient's C-reactive protein level and erythrocyte sedimentation rate. The results of both tests came back a week later and revealed an elevated level of 415.3 nmol/L (normal range 0.0 to 76.2 nmol/L) and rate of 35 mm/h (normal range 0 to 14 mm/h), respectively. A decision was made to wait for the upcoming bone scan results before determining further treatment.

The bone scan was performed 10 days after the fifth encounter and a report was faxed to the clinic on the same day. The scan revealed considerable activity over the base of the fifth metatarsal and on the left side of the rib cage. There was evidence of hypertrophic osteoarthropathy of the distal long bones of the lower extremities. (Hypertrophic osteoarthropathy denotes a periosteal reaction in the absence of a bony lesion. It is associated with a number of pulmonary and gastrointestinal conditions including non-small cell cancer of the lung.²) An urgent chest x-ray scan was suggested, as it was suspected that the lesions were metastatic deposits. The x-ray scan was performed the following day and revealed a 4-cm mass in the right middle lobe of the lung, indicative of a primary lung carcinoma.

The patient had radiation treatment of his foot, which gave him almost complete relief of the pain. Unfortunately, he had simultaneous metastatic lesions in the ribs and they subsequently became a substantial source of discomfort throughout the remaining course of his illness. Despite aggressive chemotherapy for his lung cancer, the patient's condition deteriorated rapidly. He died 5 months after diagnosis and 7 months after the initial presentation.

Discussion

While bone metastases are not uncommon, acrometastases—metastases to the hands or feet—are rare, comprising roughly 0.1% of all bony metastases.³ Acrometastasis as the presenting feature of a primary cancer is even more unusual, occurring in only 0.01% (1 in 10000) of all diagnosed cancers.^{3,4}

The primary cancers that most commonly metastasize to the foot are kidney, breast, prostate, colon, and lung cancers.^{3,5} The most likely place to find a metastatic lesion in the foot is in the tarsals (50%) followed by the metatarsals (23%).⁵

Metastasis to the foot bones often presents with swelling, pain, and a limp.⁴ Gout is often suspected as the first diagnosis in these cases⁶ and was also one of the initial diagnoses in this case. Diagnosis of metastasis is generally made either based on findings on plain film or on a technetium scan.⁷

Cancers presenting with foot metastasis do not carry a good prognosis. In one series the mean survival time was 12.3 months with a range of 1 to 27 months.⁴ In a more recent review of 221 cases of hand metastasis, Afshar et al found a mean survival of 7 months.⁸ My patient presented for the first visit at the end of August, was diagnosed in November, and died in March of the following year. The time from presentation to diagnosis was 8 weeks, and from diagnosis to death was 4½ months—neither of which is unusual in this setting.

Family physicians usually deal with familiar presentations of disease and thereby become experts in recognizing the patterns of these presentations.⁹ Roughly 80% of all problems seen in family practice fall under about 100 diagnoses, and a mere 23 diagnoses account for a full 50% of all encounters.¹⁰ For much of the time, the practitioner relies on what Croskerry would call the “heuristic intuitive” or pattern recognition approach.¹¹ This case is an instructive example of the limitations of such an approach.

Conclusion

In this case, a number of incorrect patterns were identified sequentially (plantar fasciitis, gout, stress fracture), delaying a correct diagnosis. The challenge facing family physicians is to recognize when things are not going as they should, and to apply an analytical map to the problem at hand. I will never view foot pain in quite the same way again. 

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Competing interests

None declared

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