Pulsatile Metastases: What Every Medical Practitioner Should Know

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INTRODUCTION

Pulsatile metastases are memorable, not only because of their fascinating physical features, but also because of their high diagnostic specificity. In this communication, we offer an overview of pulsatile metastases and present an illustrative case.

CASE REPORT

While vacationing in Mexico, a 62-year-old woman experienced a dull, intermittent ache in the left upper part of her abdomen. Over the next two weeks, the ache became steady, accompanied by pain in her back and left shoulder. Because of her progressive discomfort, she sought help at a local hospital where physical examination uncovered a left-sided abdominal mass. Subsequent studies identified a mass in the left kidney together with lytic lesions in the lumbar spine, pelvis, both femurs, and left humerus. At nephrectomy, the mass proved to be a renal cell carcinoma. A month later, the patient returned to Houston for further care.

On admission to our facility, she had severe, diffuse skeletal pain. Otherwise, the most conspicuous finding was a 2 × 3 × 4 cm painless, firm nodule on her forehead (Figure 1) and several smaller nodules of similar nature on her scalp. All of these lesions pulsed, but none had a murmur or thrill. The patient herself had noticed them pulsating and enlarging for about eight months before the onset of her abdominal symptoms.

Radiographs of her skull showed striking lytic lesions in close proximity to the previously described nodules (Figure 2). Management consisted primarily of pain control and radiation therapy to the areas of advanced bony destruction. At discharge, her condition had improved, but she was lost to follow-up.

DISCUSSION

If a metastasis pulsates, the primary tumor is carcinoma of the kidney (1–12) or thyroid gland (13–17). There are no other considerations, unless the sternum is the site of metastasis. In that instance alone, multiple myeloma (18–20) is another diagnostic possibility.

That declaration—though bold—accurately summarizes the available literature on pulsatile metastases and represents what every medical practitioner should know about this condition. It remains true whether the metastases appear before (5,15,16) or after (3,7) the primary tumor becomes symptomatic.

Pulsatile metastases characteristically involve the skeletal system, most commonly the sternum (1,2,8–10,13–15,17–20). But any bone, including a distal phalanx (11), can be affected. We found only one case report in which a pulsating metastasis clearly had no connection with bone (12).
Pulsatile Metastases

A CASE TO REMEMBER

Figure 1. Large, pulsatile nodule of forehead.

These metastases can be solitary or multiple, with or without tenderness and pain. They can be firm (16,20), soft (16), or fluctuant (4), and can range from flesh-colored (20) to purple (3), blue-brown (3), bluish-red (11), or reddish-plum (21). They can be as large as 14 cm × 18 cm (16), and can manifest warmth (1,2,7,16), thrills (2,7), bruits (2,4,6,7,9,16), or combinations thereof.

Occasionally, arteriovenous shunting within the metastases leads to high output cardiac failure (2,7).

Biopsy of these highly vascular metastases can induce serious hemorrhage (10) and should be done cautiously, if at all. In fact, the need for biopsy in these cases is controversial, because the differential diagnosis is so limited. The only other considerations are pulsatile primary bone tumors—hemangioma (22) and giant cell (23)—and large-vessel aneurysms that invade bone (4).

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Treatment depends largely on the type of underlying neoplasm and the extent of spread. If the metastasis is truly solitary, removing it along with the primary tumor may result in years of disease-free activity (9,15). Nevertheless, one patient with metastases lived for 17 years without any treatment (17). And in some patients, the primary tumor or the metastasis regresses spontaneously (24).

References

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