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"IVORY PELVIS"- A novel radiographic sign

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Abstract: *When a patient presents with some musculoskeletal problem, radiological evaluation is undertaken as a common first line investigation modality. Clinicians may get perplexed when a finding of* ***"Ivory pelvis"*** *like presentation, so mentioned due to diffusely increased density, is obtained on radiographs, a situation which was encountered by us. We all know that bones undergoes continous remodelling during the life, where both bone deposition and bone resorption is taking place. However, due to some diseases this normal process can get disturbed leading to either predominance of bone deposition manifesting as increased bone density, the causes of which may vary depending on whether the patient falls in pedatric or adult age group or predominance of bone resorption as seen in osteoporosis inducing diseases. Such a finding when affecting vertebrae has been defined in literature as "Ivory vertebra" sign. However, we do not find a case of so called "Ivory pelvis", which can well be a novel sign to be brought to the notice of clinicians through our case.*

Key words- *Ivory vertebra, ivory pelvis, pediatric bone tumors*

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I. Case Presentation

A 14 year old female patient came with the complaint of deep aching pain in the right hip region for 6 months which was insidious in onset and was present throughout the day, progressed to the level of inability to bear weight. It was associated with loss of weight and appetite. There was no history of trauma, fever, night sweats or any systemic complaints. On examination there was pallor, with tenderness of groin and iliac region & attempted hip movements were restricted with pain & muscle spasm. There was no associated localized, regional or generalized lympadenopathy. Radiographs of the hip along with pelvis & spine were taken. Hip radiograph typically showed diffuse, homogeneous increase in opacity of hemi pelvis with seemingly maintained bony contour [Fig.1]. Moreover, the radiographs of the spine were normal [Fig.2 & 3]. On preliminary assessment a differential diagnoses with the possibility of Osteosarcoma, Hodgkin Lymphoma, Ewing sarcoma involving the pelvic bone was entertained due to the apparently short duration of presentation and applying the causes of similar radiological appearance exemplified by "Ivory vertebra", as given in literature, pending confirmation with further evaluation. While the patient was planned for further evaluation, unfortunately, the child died soon after hospitalization.

II. Discussion

Ivory veretebra [1] is well defined in the literature-where there is diffuse and homogeneous increase in opacity of a vertebral body that otherwise retains its size and contours, and with no change in the opacity and size of adjacent intervertebral discs. However, such a occurrence, which can be aptly defined as an "ivory pelvis" radiographic sign in the absence of ivory vertebra as confirmed from radiographs, has not been found on search of literature. Therefore, it is fundamental that radiologists be aware of this novel finding on imaging characteristics, in order to better advise & alert the requesting physician with various differential diagnoses as mentioned coming to his mind for evaluation of such pediatric patients further. Diagnosis can well be confirmed with a C-arm image intensifier or computed tomogram (CT) assisted bone biopsy. The differential diagnoses in a pediatric patient remains Osteosarcoma, Hodgkin Lymphoma, Ewing sarcoma [2] involving the pelvic bone.

References

[1]. Graham TS. The ivory vertebra sign. Radiology. 2005; 235 (2): 614-5 doi:10.1148/radiol.2352021743

[2]. Donald Resnick. Diagnosis of Bone and Joint Disorders. 4th Edition (2002)

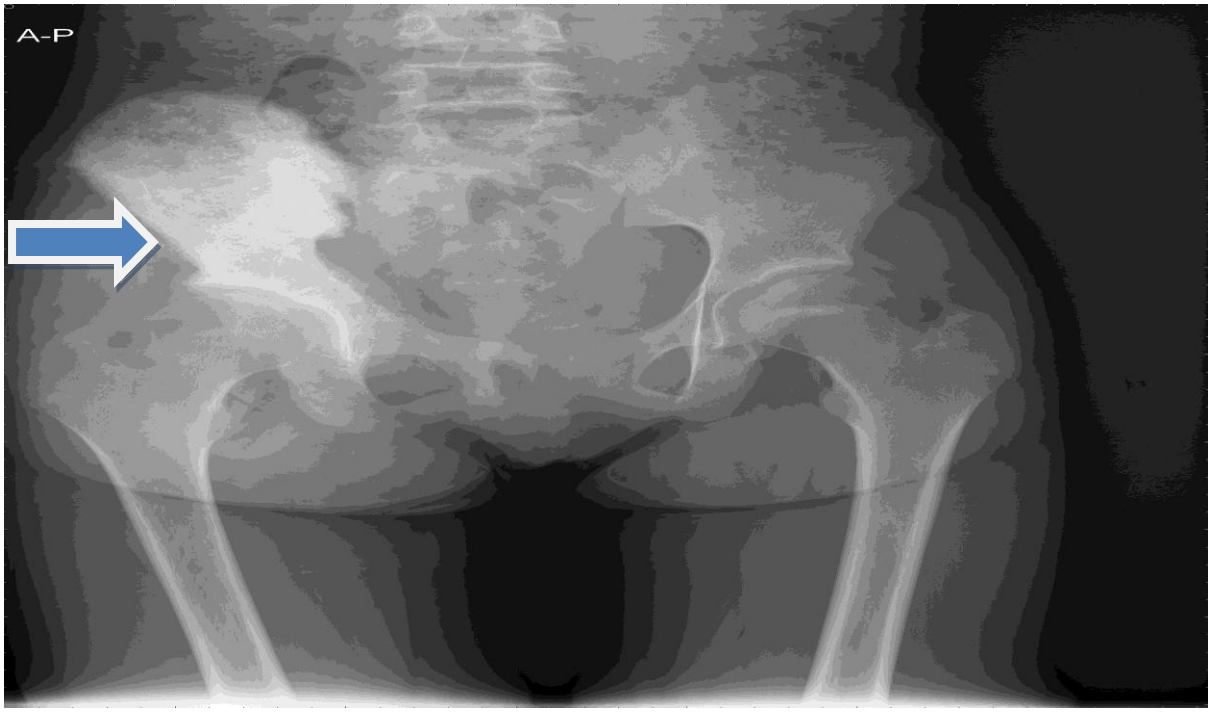

Fig.1- Radiograph of pelvis showing "Ivory hemi pelvis" (arrow)

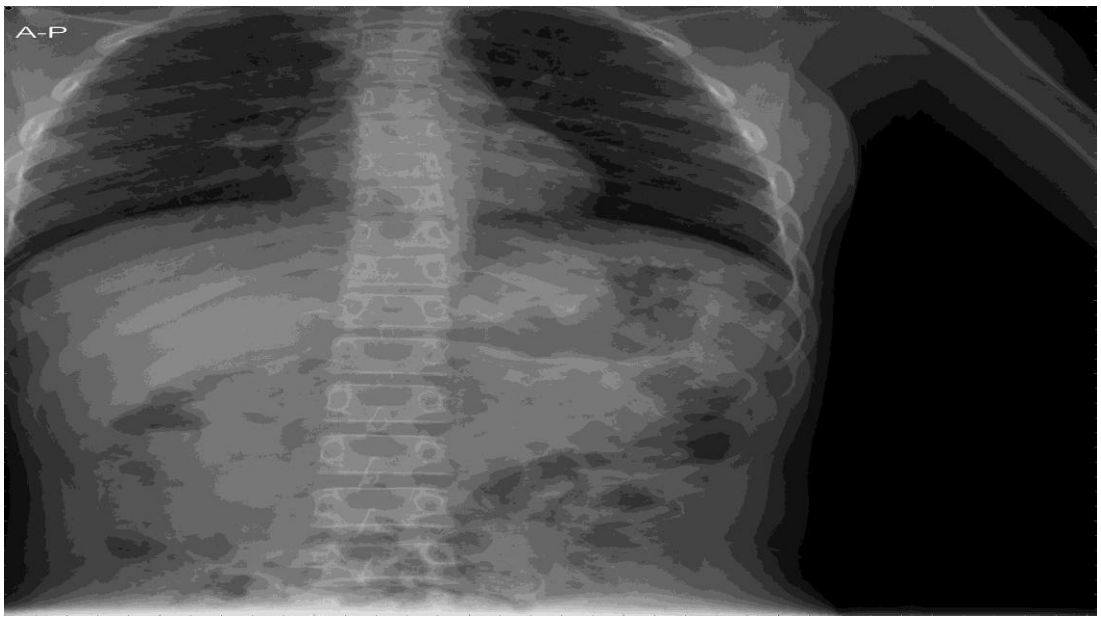

Fig.2- Normal radiograph (anteroposterior view) of Dorsolumbar spine

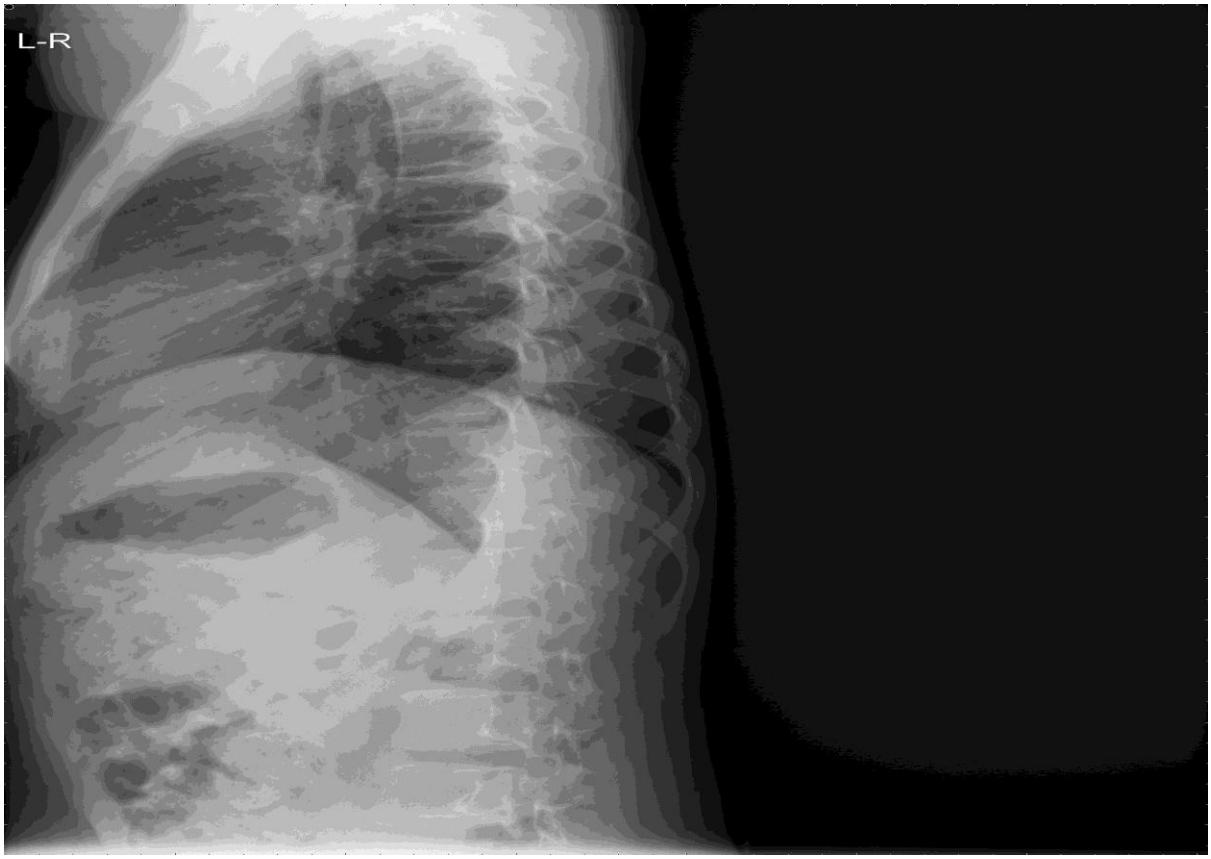

Fig.3a- Normal radiograph (Lateral view) of Dorsolumbar spine

Fig.3b- Normal radiograph of Cervical spine