Expert's comment concerning Grand Rounds case entitled “Spontaneous and idiopathic chronic spinal epidural hematoma: two case reports and review of the literature” (by S. Sarubbo, F. Garofano, G. Maida, E. Fainardi, E. Granieri, M. A. Cavallo)

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Epidural hematoma is generally contained in the “less common” spectrum of intraspinal, extradural lesions, particularly in the absence of sentinel events such as surgical manipulation or trauma [1]. As noted in this review, epidural hematomas can be divided into three categories: secondary, spontaneous and idiopathic-determined by our ability to demonstrate a cause for the bleeding. As in most instances where spinal pathologies have intracranial parallels, the relatively small size of the region of interest and the tendency of many hemorrhagic vascular abnormalities to obscure or obliterate themselves in the act of bleeding undoubtedly contribute the probably undeserved prominence of the “idiopathic” category of epidural hematomas in the spinal canal. As such, consideration should be given to detailed investigations such as screening for uncommon coagulation abnormalities and repeated imaging in a

delayed fashion for such lesions where the etiology remains unclear. Given the potential contribution of increased venous pressure within Batson’s plexus to such hemorrhages, careful attention should be given to ruling out anatomically remote arteriovenous shunts such as due to AVMs.

In general, the age of a hematoma can be estimated by MRI based on the status of the hemoglobin and its intra-versus extra-cellular location [2]. A chronic epidural hematoma should appear hypointense on both T1 and T2 sequences [3]. Unfortunately, contrast enhancement may be seen with such lesions, either peripherally [4] or, more rarely, within the lesion [5]. The presence of such enhancement may necessitate maintaining neoplasia within the differential diagnosis.

Phase	Clot age	Hemoglobin state	T1–2 signals
Hyperacute	<12	Oxyhemoglobin	Iso–hyper
Acute	1–3 days	Deoxyhemoglobin	Hypo–hypo
Early subacute	3–7 days	Intracellular methemoglobin	Hyper–hypo
Late subacute	1–2 weeks	Extracellular methemoglobin	Hyper–hyper
Chronic	>2 weeks	Hemosiderin	Hypo–hypo

These lesions can be quite fibrotic and adherent, presumably due to the inflammatory nature of clot organization and resorption. Nevertheless, they are generally well circumscribed, allowing exposure and resection through a limited spinal dissection. So long as adequate resolution of their mass effect is accomplished, extensive exploration to remove their margins is unnecessary.

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Because of the diagnostic uncertainty surrounding, the category of idiopathic spinal epidural hematomas, tissue should always be sent for pathological study. Intraoperative frozen section evaluation may be useful in cases where tumor is suspected.

It is unclear why such lesions should present in a chronic fashion. In general, the bleeding episode should be self-limited and, in most cases of spinal epidural hematomas, symptoms arise immediately in proportion to the size of the lesion and its location along the spinal neuraxis. Although such bleeds often form a solid clot that requires removal, I have certainly seen (presumed) symptomatic acute epidural hematomas resolve spontaneously over a period of hours. As such, unless operative intervention is an absolute given, repeated imaging of stable or improving patients transferred to your center for clot evacuation is recommended to avoid avoidable surgery or negative explorations. Why, then, certain hemorrhages should occur that produce few or no immediate symptoms or signs but then go on to very slowly evolve over months remains unclear.

Although nonoperative management has been reported in spinal epidural hematomas [6], the treatment is almost always surgical, with prompt evacuation producing the best results [1, 7].

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