5-2019

Malignant Transformation of a Filum Terminale Dermoid Tumor into Adenocarcinoma

Miles Hudson

Karam Asmaro
Henry Ford Health System

Mohamed Abouelleil

Sameah Haider
Henry Ford Health System

Hesham Zakaria
Henry Ford Health System

See next page for additional authors

Authors

Miles Hudson, Karam Asmaro, Mohamed Abouelleil, Sameah Haider, Hesham Zakaria, Ciprian Gradinaru, Abir Mukherjee, and Ian Lee

Malignant Transformation of a Filum Terminale Dermoid Tumor into Adenocarcinoma

Miles Hudson, BS1; Karam Asmaro, MD1; Mohamed Abouelleil, MD1; Sameah Haider, MD1; Hesham Mostafa Zakaria, MD1; Ciprian Gradinaru, MD2; Abir Mukherjee, MD3; Ian Lee, MD1

Background

Intraspinal dermoid tumors are usually rare benign growths that occur as a result of defects during neural tube formation. They make up less than 1% of tumors in the spine and are associated with spinal dysraphisms or sinus tracts[1]. Although rare, malignant transformation into squamous cell carcinoma has been previously reported[2]. Malignant transformation into adenocarcinoma, however, represents a novel phenotypic differentiation pattern that is hitherto undescribed.

Case

A 45 year-old woman presented to the emergency department with several days of low back pain, bilateral radicular pain, and one day of urinary retention with perianal anesthesia. These findings were indicative of acute cauda equina syndrome. She denied any history of trauma or cancer. No patient history or radiographic evidence of dermal sinus tract, hamartomatous stalk, or meningocele manqué was present. She has never had a lumbar puncture and has no history of radiation exposure.

A L5-S1 laminectomy and resection of mass with intraoperative neurophysiologic monitoring was performed. The mass was attached to the filum terminale. After verifying that evoked potentials were negative around the mass the filum was section proximally and distally and was removed en-bloc. The patient had an uneventful recovery. She relied on self catheterization for several months but regained full bladder control with physical therapy and medical management.

Work-Up

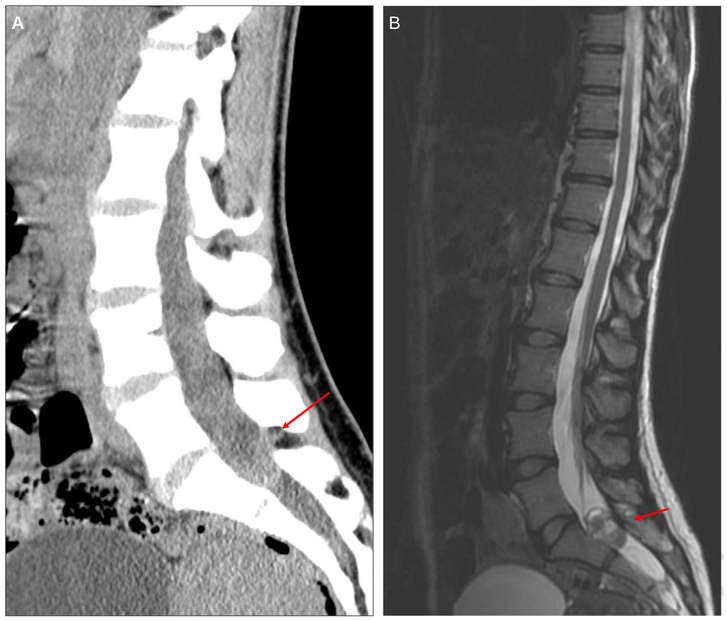

Fig 1. Lumbar Spine CT and MRI
Sagittal Lumbar spine non contrast CT demonstrates a 2.1 x 2.3 x 3 hyperdensity at the S1 location (1A). Sagittal T2 weighted MRI re-demonstrates the mass but also shows that the mass is heterogenous, intradural, and is tethered to the cord.

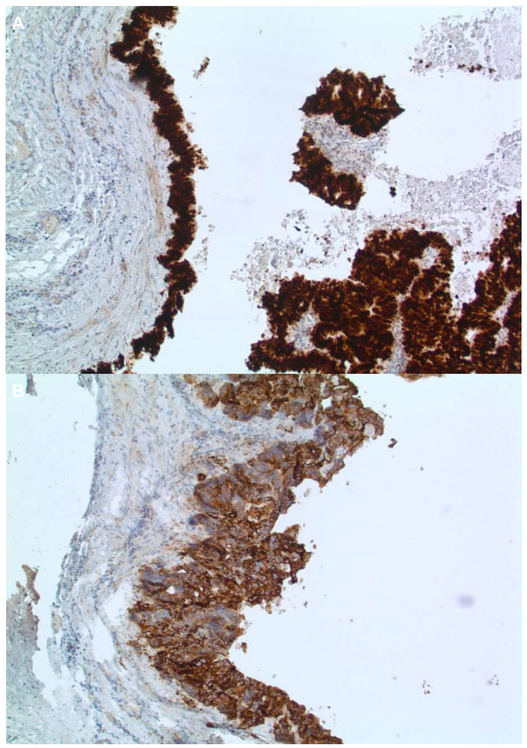

Fig 2. Histological Examination of Filum Terminale Mass
Malignant multilayer glandular epithelium with cribriform architecture along with focal areas of necrosis. CK7 immunostain was performed and the neoplastic cells were reactive(2A). Cells were also reactive to CX-2 Immunostain (2B)

Discussion/Conclusion

Dermoid cysts typically have tissue from at least two germ cell layers: ectoderm, mesoderm, and endoderm[3]. The cyst wall contains stratified squamous epithelium with any combination of dermal appendages. This patient's tumor is unique from a histopathologic perspective given the ectodermally derived cyst lining was principally replaced by intestinal type adenocarcinoma instead of the anticipated mature, keratinized stratified squamous epithelium.

Twenty percent of all dermoid tumors have an associated sinus tract[4]. In the absence of a sinus tract, key radiographic features may aid in the diagnosis of dermoids as demonstrated by T2 MRI based identification of heterogeneous mass.

There are two reported cases of intraspinal dermoid tumors undering going malignant transformation into squamous cell carcinoma[5]. This case is the first publicized occurence of a dermoid tumor transforming into adenocarcinoma. The mechanism for malignant transformation has yet to be identified but is thought to be associated with long term presence.

References

1.Patankar A, Sheth J. Dermoid cyst: A rare intramedullary inclusion cyst. Asian Journal of Neurosurgery. 2012;7(2):81. doi:10.4103/1793-5482.98651

2.Kudo N, Hasegawa K, Ogose A, et al. Malignant transformation of a lumbar intradural dermoid cyst. Journal of Orthopaedic Science. 2007;12(3):300-302. doi:10.1007/s00776-007-1125-2

3. Lombardi G, Passerini A. Congenital Tumours of the Spinal Cord. Acta Radiologica Diagnosis. 1966;5(P2):1047-1050. doi:10.1177/02841851660050P249

4.Baruah D, Chandra T, Bajaj M, et al. A simplified algorithm for diagnosis of spinal cord lesions. Curr Probl Diagn Radiol. 2015;44(3):256-266. doi:10.1067/j.cpradiol.2014.12.004

5. Ino M, Nagase M, Tsuge K, Kamata M, Udagawa E. Malignant squamous cell carcinoma arising in a lumbar dermoid cyst: A case report. International Orthopaedics. 1995;19(3). doi:10.1007/BF00181867