Concurrent Diagnoses: Meningioma and Hodgkin Lymphoma

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BACKGROUND

- Hodgkin lymphoma (HL) is a type of cancer affecting lymph nodes
- Neurological complications in HL are rare. [1]
- HL makes up 3% of cancer in children 14 years and younger and 11% of adolescents aged 15-19 years. [1]
- Lymphoma is the second most common cancer in adolescents.[1]
- Identification of concurrent HL and a brain tumor is very uncommon.[4,5]
- This study describes a patient with concurrent diagnoses of meningioma and HL

METHODS

- A PubMed literature search was performed using Keywords: Hodgkin's lymphoma (AND) meningioma, Hodgkin's lymphoma (AND) brain tumor
  - Published between 1964-2022
  - Human
  - English Language.

CASE REPORT

- A 17-year-old adolescent female presented with cervical lymphadenopathy and transient right foot paresthesia and weakness
- Excisional lymph node biopsy confirmed classical, nodular sclerosing HL
- Staging evaluation for HL included CT-neck, chest, abdomen, and pelvis and PET-CT
- CT neck visualized a brain lesion
- MRI brain noted a posterior frontal lobe mass, most consistent with a meningioma
- For HL, patient final stage was IIIA, intermediate risk
  - Treated with 4 cycles of chemotherapy according to AHOD0031
  - End of therapy disease evaluation noted complete clinical remission
- She then underwent gross total resection of the brain tumor
  - Pathology confirmed meningioma.
  - Experienced a sagittal sinus thrombosis that resulted in right sided lower extremity weakness
  - With physical therapy, full resolution of this deficit
- 6 months off therapy, continues to be in remission for both diagnoses

RESULTS

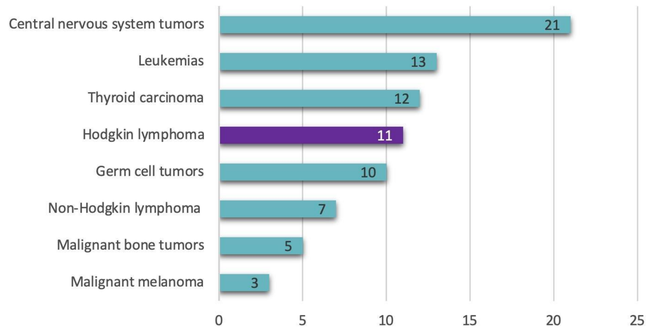

Figure 1: International Classification of Cancer in Adolescents Ages 15-19 years by Percentage
Data adapted from Siegel, RL, Miller, KD, Fuchs, HE, Jemal, A. Cancer statistics, 2022. *CA Cancer J Clin*. 2022.
*All cancers with an incidence percentage below 3% have been omitted

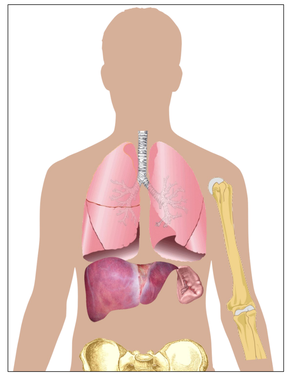

Figure 2: Sites of metastasis (extra-nodal) involvement in Hodgkin Lymphoma include lung, liver, spleen, bone, and bone marrow.[2]

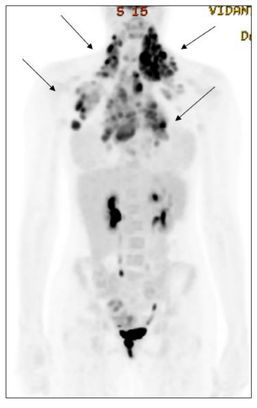

Figure 3: Positron emission tomography (PET) scan demonstrating extensive hypermetabolic activity (Hodgkin Lymphoma, HL) involving the neck and chest (*arrows*) with concern of pulmonary involvement.

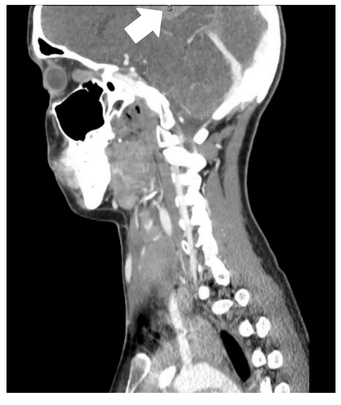

Figure 4: CT sagittal post-contrast image obtained for lymphoma staging showing an enhancing left periventricular intracranial mass, partially visualized at the cranial-most aspect (white solid arrow).

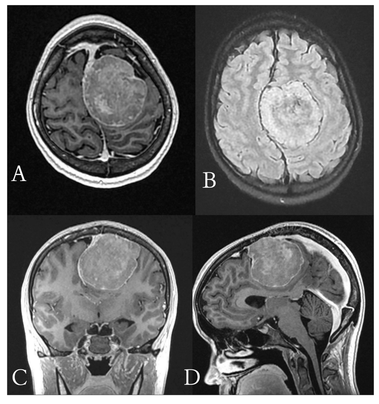

Figure 5: Magnetic resonance imaging (MRI) demonstrating a mass in the posterior frontal lobe, measuring 6.3cm x 6.7 cm x 6.2 cm (A-Axial T1 post-contrast) with minimal surrounding edema and midline shift (B-Axial T2 FLAIR non-contrast), with displacement of the falx and superior sagittal sinus of 2.2cm (C-Coronal T1 post-contrast), and downward displacement of corpus callosum (D-Sagittal T1 post-contrast).

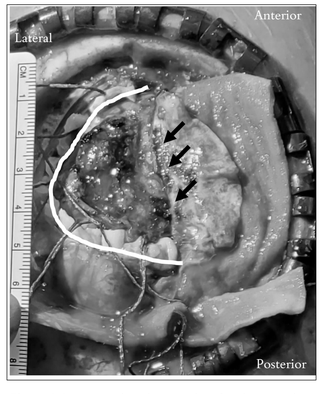

Figure 6: Intraoperative photography after dura opening prior to tumor removal. The patient is positioned supine with anterior, posterior, and lateral as marked. The margins of the tumor were demarcated by neurosurgical sponges (*white curved line*). The highly vascular tumor was firmer than the normal brain. The tumor also attached to the dura overlying the superior sagittal sinus (*solid black arrows*).

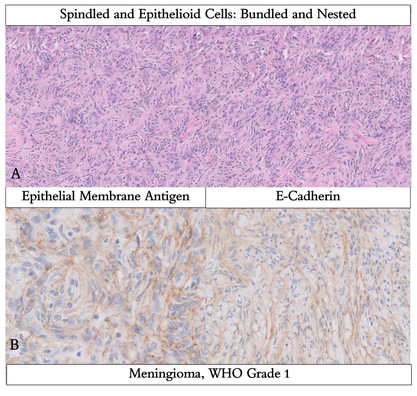

Figure 7: Histology (A) showing spindled and epithelioid cells that are bundled and nested. Immunohistochemistry (B): Neoplastic cells showing expression of epithelial membrane antigen, E-cadherin, and CD56 (not shown) confirming Meningioma, World Health Organization Grade 1.

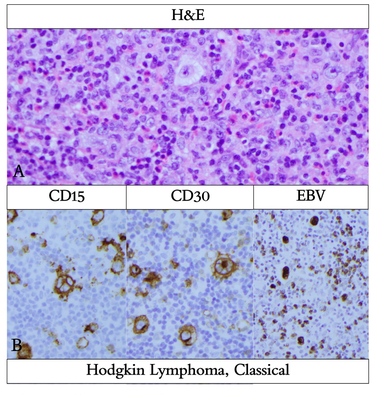

Figure 8: Histology (A) of patient's lymph node biopsy demonstrates classical nodular sclerosing HL morphology. Immunohistochemistry (B) is positive for CD15, CD30, and EBV.

LITERATURE REVIEW

- Rarely, 0.2-0.5% of HL cases have CNS involvement.[3]
- Currently HL has an average 5-year survival rate of 97%.[1]
- Since 1964, there have been less than 10 published articles regarding HL with CNS metastasis and 2 articles regarding concurrent diagnosis of HL and CNS tumors.[4,5] None of these cases occurred in pediatric patients, defined as 0-19 years.

DISCUSSION

- Our case highlights the rarity of concurrent diagnoses of two distinct malignancies in the pediatric population.
- Given the rarity of CNS involvement, current staging guidelines for Hodgkin's lymphoma do not involve screening of the head in pediatric patients.
- Given our unique case, future consideration should be made for baseline imaging of CT head, especially in cases with minor neurological deficits.
- At the time of her concurrent diagnoses, her treatment team felt it was medically necessary to prioritize the treatment of her Hodgkin's lymphoma over the meningioma.
- A delay in treatment of lymphoma could result in life-threatening sequelae from worsening lymphadenopathy and ultimately decreasing overall survival for this diagnosis.

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