Dexamethasone

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Bone marrow necrosis following off label treatment with dexamethasone: case report

A 72-year-old man developed bone marrow necrosis following off label treatment with dexamethasone for COVID-19.

The man, who had diabetes and hypertension, was admitted due to fever, anosmia, cough and ageusia in mid-February 2021. After investigation, he was diagnosed with COVID-19. Then, he received off label IV dexamethasone [*dosage not stated*] and 2 doses of remdesivir. Later, his liver function tests increased and remdesivir was stopped. After 5 days, he was shifted to other hospital. Then, he started receiving off label treatment with 2 doses of tocilizumab and was continued on dexamethasone. His blood sugar was controlled with insulin. Haemogram showed a decreasing platelet count, and he received platelet transfusions. Later, he was noted to have disseminated intravascular coagulopathy (DIC) due to *Klebsiella pneumoniae* sepsis. Then, he was treated with filgrastim and meropenem. Ten days following his discharge from the COVID-19 unit, he presented with severe, radiating pain in both gluteal regions which aggravated both on sitting and walking. He was admitted in late March 2021. An MRI revealed abnormal marrow signal intensity in all vertebral bodies. Short-tau inversion imaging (STIR) and T1-hypointense areas with lack of signal drop on opposed-phase gradient images were noted along the posterior third of all vertebral bodies. STIR hyperintensity was noted with an appropriate signal drop on opposed-phase gradient images constant with viable fatty marrow in the remaining anterior two thirds of the vertebrae. Fluorodeoxyglucose positron emission tomography CT showed abnormal heterogeneous areas of increased tracer uptake in all the vertebral bodies and showed mild sclerotic density with loss of normal trabecular pattern. These findings suggested an infiltrative marrow disorder or metastasis. He was also noted to have avascular bone marrow necrosis. Bone marrow trephine aspiration and biopsy demonstrated areas of necrosis with neutrophilic debris, lymphohistiocytic aggregates and proliferating fibroblasts in an oedematous background. Scattered reactive plasma cells showed immunopositivity for CD138 (cluster of differentiation), kappa and lambda immunostains. An ill-formed granuloma comprising of lymphocytes, plasma cells and few histiocytic cells was noted. Based on these, it was postulated that the bone marrow necrosis was associated with COVID-19, as well as glucocorticoid (dexamethasone) use [*time to reaction onset and outcome not stated*].

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