

## A Rare Cause of Stiff Neck: Muscle Lymphoma Case Report and Review of Literature

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### ABSTRACT

Muscle lymphoma is a very rare disorder, comprising only a very small subset of lymphoma cases. It can develop either as primary extranodal intramuscular lymphoma or as intramuscular manifestation of disseminated disease. There are characteristic imaging features which, if recognized, can prevent delay in diagnosis and treatment, particularly when not suspected clinically. We herein present a rare case of primary muscle non-Hodgkin lymphoma with a description of the associated clinicopathological findings and a review of the relevant literature.

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### Introduction

Extranodal involvement is relatively common in non-Hodgkin Lymphoma, present in up to 30% of cases [1]. Involvement of the muscle, however, is much less frequent, representing 1.5–5% of extranodal lymphoma cases [2, 3]. Inclusion of lymphoma in the differential diagnosis of soft-tissue tumors is important in relevant cases because the pathologic diagnosis can be influenced by the use of special staining procedures [4]. To avoid unnecessary surgery, the correct diagnosis is required. Differentiation of skeletal muscle lymphoma from various neoplastic and inflammatory diseases, however, often is difficult on the basis of clinical and imaging findings alone [5, 6]. Therefore, specific MRI findings of skeletal lymphoma would be of value in differential diagnosis.

### Patient and Observation

This is a 62-year-old man, with no particular history, who consults for a painful cervical stiffness of progressive installation with recent appearance of a right cervical swelling, without notion of trauma, all evolving in a context of apyrexia and general condition conservation.

Clinical examination found a right dorsal cervical mass, adherent to the deep muscular plane, associated with a few right cervical lymph nodes with inflammatory appearance. The remainder of the somatic exam was unremarkable. Ultrasound of the cervical soft tissue was not helpful. Cervical muscle magnetic resonance imaging (MRI) revealed a tumor-like lesion process involving the right cervical muscle compartments, with isosignal in T1, hypersignal in T2 and taking the contrast enhancement in T1-weighted sequences (Figures 1, 2 and 3). The other radiological examinations, including a brain, thoracic and abdominal CT scan were normal. A muscle biopsy was performed.

The anatomopathological study revealed a dense and diffuse cellular tumor proliferation with a high mitotic index. The immunohistochemical study and the antibody profile

allowed a positive diagnosis of type B non-Hodgkin's malignant lymphoma.

After a multidisciplinary oncological discussion, the patient received six cycles of chemotherapy with complete remission after 24 months of follow-up.

### Discussion

The primary muscle locations of malignant non-Hodgkin lymphomas are exceptional, representing 0.5% of extranodal non-Hodgkin lymphomas [7].

Localization in skeletal muscle is rare and only a few dozen cases have been reported in the literature [8].

These lymphomatous muscle infiltrations may be linked to an extension to the lymphoma muscles by hematogenous or even locoregional (lymph node, bone) [9,10].

Primary muscular lymphomas occur mainly in men, with an average age of 68 years [7,10]. Clinical signs are not specific. They classically have general signs, associating a deterioration of the general condition, hyperthermia and night sweats [10]. The mode of revelation can also include myalgia or a motor deficit [10].

Muscle locations are preferentially located in the lower limbs; other injuries are less common [10].

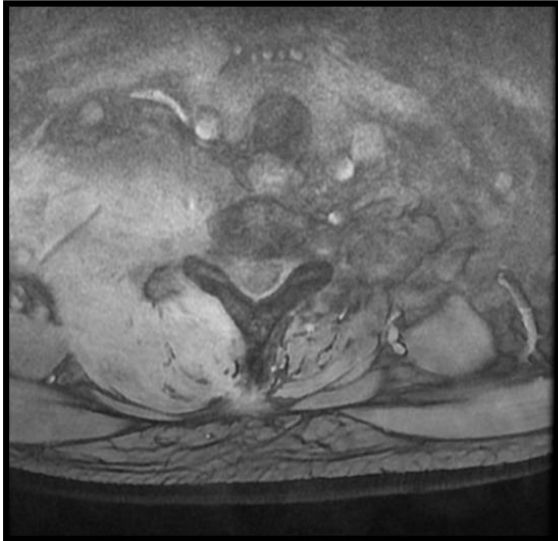
MRI is more sensitive than a CT scan to detect muscle locations of lymphomas, especially because it offers the advantage of excellent differentiation of tissue damage. Indeed, it makes it possible to orient the diagnosis in front of the presence of some signs in favor of the lymphomatous attack, such as the multi-compartmental and longitudinal attack along the muscular fibers, the respect of some intramuscular fatty septa, the visualization of vascular structures within the mass, as well as marginal enhancement of the septa [11].

This examination can highlight, as in our patient, iso-intense muscle lesions taking contrast enhancement in T1-weighted sequences and characterized by hypersignals in T2-weighted sequences.

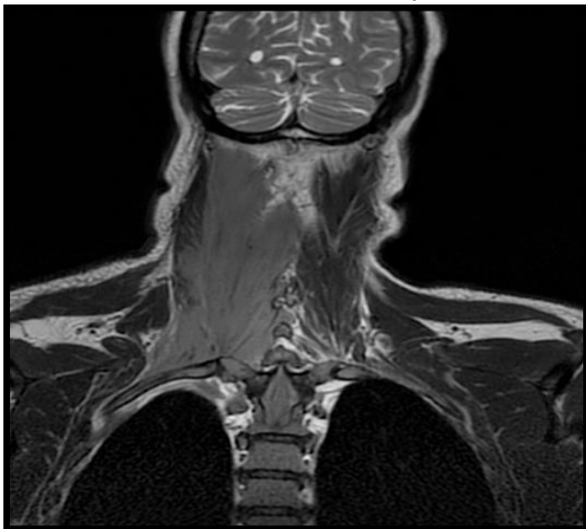
The diagnosis with certainty is based on the pathological examination coupled with the performance of immunostaining, in order to classify the different types of muscular lymphoma, from which the therapeutic management of patients will result.

### Conclusion

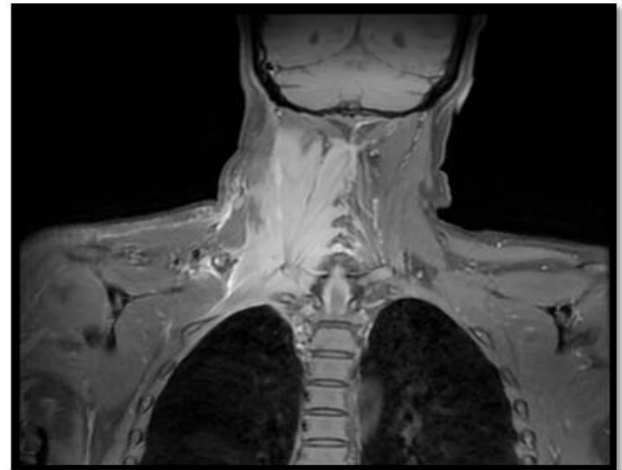
Primary muscle lymphomas are rare but present with characteristic findings on MRI and CT. The radiologist can be the first provider to suggest this diagnosis and anticipate the special biopsy preparation needed for definitive diagnosis.



**Figure 1. Axial T2 2D Merge sequence showing the tumor in hypersignal, arriving medially in contact with the vertebra without bone lysis.**



**Figure 2 . Coronal T2 showing hyperintensity of muscle fibers with enlargement of the right neck muscles with effacement of the intramuscular fat.**



**Figure 3. Coronal slice MRI after Gadolinium injection in T1-weighted sequence showing the diffuse enhancement of the muscle tumor process.**

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