Conservative treatment is generally implemented when a patient complains of musculoskeletal symptoms, but there are cases where what appears to be a structural or functional problem is something more serious, or occult. There are “red flags” that are seen for musculoskeletal presentation of serious diseases, and evaluation of a patient for more serious conditions is necessary when they do not improve as expected, or they present with atypical signs and symptoms.

Subjective Findings and History
History should include questions about whether symptoms predate a trauma that brought the patient in for treatment. The existence of a recent trauma does not rule out serious underlying disease, as 50% of low back pain due to cancer is associated with an initial report of trauma. Night pain is less frequently useful as a cancer red flag, but is more of a concern if pain is severe, progressive, or unrelieved by position.

Red flags for non-malignant serious diseases include:

- Age over 50 may indicate a greater risk for serious disease.
- Back pain in patients under 20 is a red flag for organic disease.
- Malaise, loss of appetite, anorexia.
- Significant, unexplained fatigue.
- Bilateral sciatica in patients over 50.
- Sciatica with bizarre sensory symptoms and/or neurological deficits without back pain.
- Sciatica non-responsive to treatment.
- Urinary changes (consider cauda equina and prostate disease).
- Multiple joint involvement (consider auto-immune/inflammatory disease).
- Sexual dysfunction (consider neoplasm, cauda equina, prostate disease, cardiovascular, renal).
- Abnormal menstrual bleeding/pain.
- Persistent GI symptoms.
- Persistent GU symptoms.
- Prior history of cancer must be investigated when new symptoms appear.
• Unexplained weight loss; weight loss of more than 10 pounds over 3 months is suspicious and can be associated with cancer, spinal infection or auto-immune inflammatory disease.
• No relief of back pain with bed rest, or unvarying symptoms with exertion can be linked to cancer or infection.
• Worse pain when lying down, with relief sitting or flexing over a table may suggest malignancy, retroperitoneal lymphadenopathy, primary renal cancer, lymphoma, or testicular cancer.
• Lack of response to treatment in one month should alert to consideration of cancer, infection, inflammatory disease.
• Pain duration of greater than one month and/or severe, progressive pain over weeks to months should trigger investigation.
• Structural deformity.

**Risk factors for serious disease:**
• Recent history of primary or recurrent bacterial infections.
• Increased susceptibility to infection.
• Current use of anti-coagulants.
• History of oral/i.v. corticosteroid use.
• History of diabetes.
• Symptoms or risk factors for HIV or HIV positivity.

**Risk factors for cervical artery dissection:**
• Connective tissue diseases e.g. autosomal dominant polycystic kidney disease, Ehlers-Danlos type IV, Marfan’s syndrome, fibromuscular dystrophy.
• Migraine headaches.
• Recent infection, particularly upper respiratory, associated with symptoms listed below, especially in patients less than 45 years of age.

**Symptoms of vertebrobasilar insufficiency and cervical artery dissection:**
• New or sudden onset of heat/upper neck or face pain unfamiliar to the patient.
• Signs of vertebrobasilar ischemia: diplopia, dizziness, drop attacks, dysarthria, gait ataxia, nausea, numbness, nystagmus.

**Red flags for possible ischemic heart disease, MI, abdominal aortic aneurysm (AAA):**
• Visceral pain referred to left (or right) shoulder, jaw, chest.
• Crushing chest pain radiating to left shoulder and/or jaw.
• Levine’s sign over chest.
• History of CV disease, atherosclerosis.
• Diaphoresis or shortness of breath.
• Family history of AAA.
• Smoking history.
Red flags for fracture with low back pain: \(^7,^8\)
- Multiple red flags concurrently increase the likelihood of fracture.
- Older age.
- Severe trauma.
- Prolonged corticosteroid use.
- Presence of contusion or abrasion.

Red flags for malignancy with low back pain: \(^7,^8\)
- History of malignancy but consideration should also be based on more than one “red flag” question.

Red flags for spinal cord or cauda equina compression: \(^9\)
- The predictive value of either of the following red flags only marginally raises the clinical suspicion of spinal cord compression: bowel and bladder dysfunction, saddle sensory disturbance.

Objective Findings

Red flags for serious disease on physical exam:
- Neurological deficits in older people.
- “Alarm sign”: during SLR test, when a patient with sciatica points to a specific location in the leg or pelvis that becomes aggravated, consider local mass.
- Pain with spinal percussion: exquisite, lingering pain localized over 1-2 spinous processes (consider cancer or spinal infection).
- Hip pain with contracture (consider infection).
- Pronounced loss of hip flexor strength.
- Palpable mass.
- Significant bony tenderness, especially of more superficial bones.
- Vascular deficits such as loss of pulse (consider DVT and PAD).
- Spinal deformity such as acute kyphosis or scoliosis.
- Abdominal mass or bruit.

Red flags from ancillary studies when back pain is present:
- Elevated ESR or CRP, especially above 50.
- Increased serum calcium, protein (especially globulins), and/or ALP.
- Anemia (most anemias of chronic disease are normochromic, normocytic)
- Pathological imaging studies.

Physical exam procedures recommended when vertebrobasilar insufficiency (VBI) is suspected: \(^2\)
- Observation of gait, skin appearance, extremity disproportion.
- Blood pressure measurements (High BP noted in 50% of cases of spontaneous artery dissection).
- Pulse: frequency, pressure, and auscultation
- Abdominal palpation.
- Neurological exam: mental status, upper and lower extremity neuro exam, reflexes and pathological reflexes.
• Evaluate for peripheral joint hyper-flexibility and skin elasticity (connective tissue diseases).

**Physical exam findings suggestive of stroke:**

• Facial droop.
• Arm drift.
• Abnormal speech or mentation.

**Red flags for gallbladder disease:**

• Visceral referred pain to right shoulder and scapula.
• Poorly defined pain that cannot be reproduced on shoulder exam.
• Pain with percussion in RUQ of abdomen.

**Tests for suspected inflammatory arthropathies:**

• Radiological evaluation of affected joints.
• Laboratory evaluation: ESR, CRP, uric acid, ANA reflex panels, RA.

**Assessment**

• Consider, cancer, infection, stroke, autoimmune disease, vertebral artery dissection, PAD.
• Urgent musculoskeletal conditions that require prompt diagnosis: septic arthritis, acute crystal-induced arthritis (e.g. gout), and fracture; all suspected by acute onset and monoarticular or focal musculoskeletal pain.
• Many musculoskeletal conditions resemble each other at the outset, and some may take weeks or months to evolve into a readily recognizable diagnostic entity. This should strengthen the search for a definitive diagnosis on the first visit.

**Plan**

• A clinical presentation suggesting MI, VBI, AAA, or CAD constitutes an emergency referral.
• Absolute contraindications for cervical manipulation and indicators for referral:
  o Severe persistent headache unlike previous headaches.
  o Unilateral facial parasthesia.
  o Objective cerebellar signs.
  o Lateral medullary signs.
  o Visual field defects.
• Radiographs and appropriate laboratory studies should be performed if malignancy is suspected.
  o Consider ESR, CRP, CBC with differential, serum chemistries.
  o Consider advanced imaging if x-rays are negative and infection is suspected since infection may not show for 7-10 days on x-ray, and a bone scan may be considered.
• Referral to oncologist if tests suggest cancer, or if it cannot be ruled out.
• Immediate referral for antibiotic therapy if osseous infection is found.
• In the absence of alarming symptoms and signs (red flags) diagnostic imaging, including radiographs, is not typically recommended in the first six weeks of treatment.

**Length of Treatment**
Always reassess if patient does not recover with care at the expected rate or to the expected degree.

**Referral Criteria**
- Refer for diagnostic imaging after 4-6 weeks if no improvement when condition is initially expected to be benign.
- When to make referrals for low back pain:
  - Patient with cauda equine syndrome.
  - Progression of neurological symptoms.
  - Loss of motor function (vs. sensory losses that can be followed in an outpatient setting).
  - Patients with cancer, infection or severe spinal deformity.
  - Patients who have not responded to treatment.
  - If patient exhibits radicular or claudication symptoms for more than 12 weeks.
  - MRI or CT confirmation of significant spinal stenosis.

**Clinical Pathway Feedback**
CHP desires to keep our clinical pathways customarily updated. If you wish to provide additional input, please use the e-mail address listed below and identify which clinical pathway you are referencing. Thank you for taking the time to give us your comments.

Clinical Services Department: providers@chpgroup.com

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