

Your Livelihood: Your Neck, Shoulder, and Arm

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Abstract

Large animal veterinarians face acute and chronic repetitive-strain injuries daily to their upper extremities. Symptoms of shoulder pain and arm weakness encompass at least 50 different diagnoses. This talk will identify and discuss the most common disabling conditions and provide insight into the complexity of the problem. Treatment, rehabilitation, and methods of preventing future disabilities will also be presented.

Résumé

Les vétérinaires de grands animaux s'exposent tous les jours à des risques de blessures aiguës et chroniques aux membres supérieurs, dues à des mouvements répétitifs. Les douleurs aux épaules et les faiblesses aux bras englobent au moins une cinquantaine de diagnostics différents. Dans cette communication, nous identifierons les cas de douleurs et de blessures les plus courants, et nous examinerons la complexité du problème. Nous présenterons aussi des traitements à appliquer, des techniques de rééducation et des méthodes pour prévenir ces causes potentielles d'invalidité.

Introduction

A functioning, pain-free upper extremity is a valuable asset for a large animal veterinarian. Repetitive pregnancy checks and acute traumatic strains to the upper extremity can lead to a dysfunctional arm with shoulder pain. Understanding the nature and cause of this occupational problem is the first step in its treatment, prevention, and rehabilitation.

This presentation will reveal the multiple causes of both acute and repetitive upper extremity dysfunction and will suggest a plan of action for rehabilitation and prevention.

Overview

To understand shoulder and arm problems, one has to appreciate the specific unique anatomy of this part of the body. The shoulder joint has a large range of motion controlled by muscles sitting on a mobile scapular base, also solely supported and controlled by muscles. All of the muscles to the shoulder and scapular

area are controlled by the cervical nerve roots via the brachioplexus. Arm and shoulder dysfunction can occur as an active injury to the nerves, muscles or tendons of the upper extremity or as a chronic repetitive injury to the rotator cuff or brachioplexus. The history of the injury or the ongoing problem (pain or weakness) is helpful, but physical examination is needed to confirm most diagnoses.

The findings of impingement and weakness are looked for to determine the degree of rotator cuff tendinopathy and brachioplexus neuropathy.

Diagnosis

Diagnostic ultrasound, x-rays and electromyographic studies can be helpful in defining the problem and determining whether surgical repair of the rotator cuff is needed. Neurological damage (and its degree) resulting in muscle weakness and shoulder dysfunction can be temporary or permanent. Once the diagnosis is confirmed, a treatment plan and rehabilitation program can be established. A rehabilitation program emphasizes muscular strengthening to correct the scapular dyskinesis. The success of rehabilitation depends on the degree of initial nerve injury and coordinated muscle strengthening.

Prevention

Prevention, however, is the key to future function. The cause of the problem has to be recognized and eliminated. In most cases prevention is based on the following principles:

- 1) The brachioplexus has to be protected and all actions have to avoid repetitive impingement on the rotator cuff. Shoulder and arm position is critical and requires knowledge of anatomy and a thorough understanding of the problem both by the caregiver and the patient.
- 2) In order to obtain maximum functional improvement and prevention some modification in the position of the arm during the pelvic examination in large animals is required.

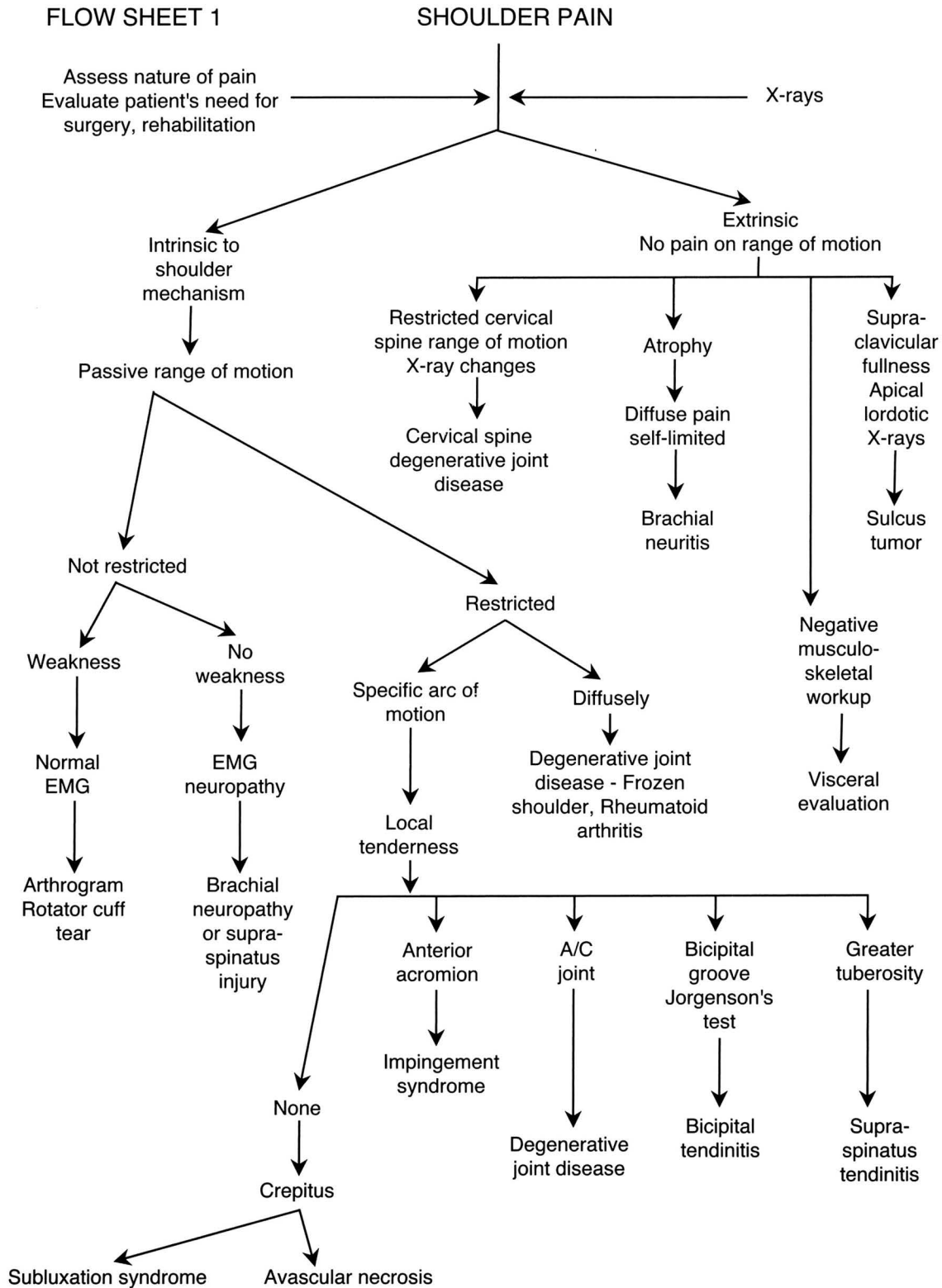
The enclosed tables and flow sheets outline some of the problems and the thought process involved in the decisions made around treatment and rehabilitation.

References

1. Ailsby RL: Occupational arm, shoulder, and neck syndrome affecting large animal practitioners. *Can Vet J* 37, June 1996.

2. Brotzman W: *Clinical Orthopaedic Rehabilitation*, ed 2, CV Mosby, 2003.

3. Bucholz, Lippert, Wenger, Ezaki: *Orthopaedic Decision Making*, CV Mosby, 1984.



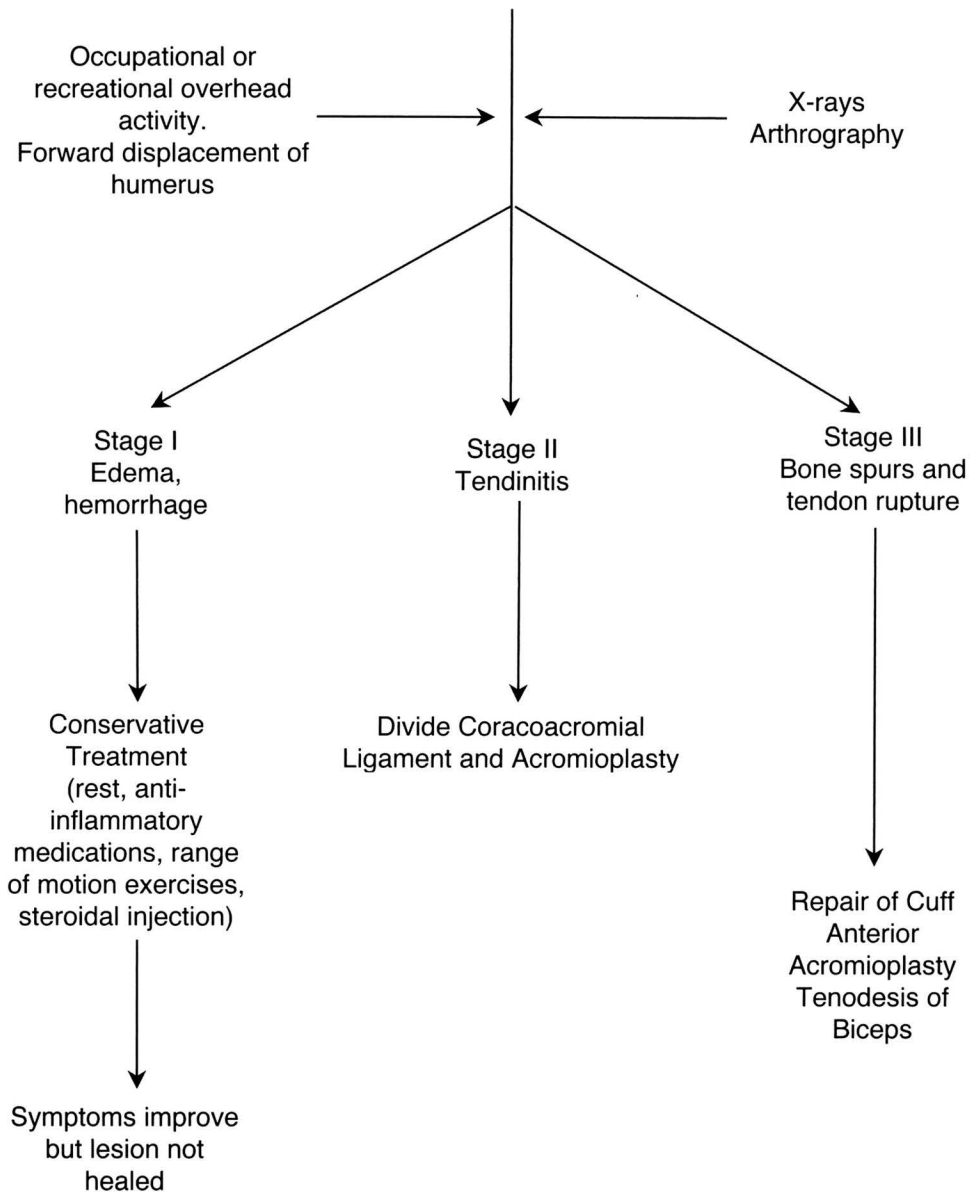


TABLE 1 PROGRESSIVE STAGES OF SHOULDER IMPINGEMENT

STAGE 1: EDEMA AND INFLAMMATION

Typical Age	Younger than 25 years but may occur at any age
Clinical Course	Reversible lesion
Physical Signs	<ul style="list-style-type: none"> *Tenderness to palpation over the greater tuberosity of the humerus * Tenderness along anterior ridge or acromion * Painful arc of abduction between 60 and 120^o, increased resistance at 90^o * Positive impingement sign * Shoulder ROM may be restricted with significant subacromial inflammation

STAGE 2: FIBROSIS AND TENDINITIS

Typical Age	25 to 40 years
Clinical Course	Not reversible by modification of activity
Physical Signs	<p>Stage 1 signs plus the following:</p> <ul style="list-style-type: none"> * Greater degree of soft tissue crepitus may be felt because of scarring in the subacromial space * Catching sensation with lowering of arm at approximately 100 degrees * Limitation of active and passive ROM

STAGE 3: BONE SPURS AND TENDON RUPTURES

Typical Age	Greater than 40 years
Clinical Course	Not reversible
Physical Signs	<p>Stages 1 and 2 signs plus the following:</p> <ul style="list-style-type: none"> *Limitation of ROM, more pronounced with active motion * Atrophy of infraspinatus * Weakness of shoulder abduction and external rotation * Biceps tendon involvement * AC joint tenderness

