

## Anesthetic Management of a Patient Presenting a Rheumatoid Arthritis

M. Samali<sup>1\*</sup>, A. Elkoundi<sup>1</sup>, A. Meskine<sup>1</sup>, M. Rabi Andaloussi<sup>1</sup>, M. Bensghir, H. Balkhi<sup>1</sup>

<sup>1</sup>Department of Anesthesiology and Intensive Care, Military Hospital Mohammed V Rabat, Faculty of Medicine and Pharmacy of Rabat, University Mohammed V Rabat, Morocco

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\*Corresponding author: M. Samali

Department of Anesthesiology and Intensive Care, Military Hospital Mohammed V Rabat, Faculty of Medicine and Pharmacy of Rabat, University Mohammed V Rabat, Morocco

### Abstract

### Case Report

Rheumatoid arthritis (RA) is a chronic disease that progresses in relapses and remissions. The disease affects preferentially the small joints but an extension to the cervical spine poses a particular problem for anaesthesia because of the risk of difficult and/or dangerous intubation due to the aggravation of neurological lesions linked to the occurrence of subluxation of the axis on the atlas. Treatments such as Non-steroidal anti-inflammatory drugs (NSAIDs) or corticosteroids should be considered perioperatively, as it is important not to discontinue them, knowing that they increase the risk of sepsis as do other treatments (methotrexate) which have an immunosuppressive effect. The pre-anaesthetic evaluation of patients must also look for systemic damage (pericarditis, chronic interstitial lung disease) likely to interfere with the anaesthetic management. The latter must favour, as far as possible, loco-regional anaesthesia. Intubation through a fibrocope is the least traumatic technique. Taking care of the discomfort of the installation on a table, which is particularly harmful to these patients, and programming a multimodal analgesia as well as the continuation of treatment of RA.

**Keywords:** Rheumatoid arthritis, anesthetic.

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## INTRODUCTION

Rheumatoid arthritis is the most common chronic inflammatory disease encountered in medicine. It affects 0.8% of the general population.

This autoimmune disease affects an average of three women for every man.

The age of onset of the disease is most often between 35 and 55 years, although it can occur at any age [1]. The disease leads to variable joint destruction in terms of number of joints affected and in intensity depending on the individual. The joints most often affected are those of the hands and wrists, feet and cervical spine.

The prognosis depends on the risk of atlanto-axial dislocation, which is a real challenge for anaesthetists during intubation, and also depends on extrarticular damage, particularly cardiovascular, pulmonary, neurological and infectious.

We report the case of a patient followed for a rheumatoid arthritis complicated by an atlanto-axial

dislocation who has symptomatic hyperalgesic multi-lithiasis gallbladder programmed for a cholecystectomy.

## CASE PRESENTATION

A 26-year-old female, weighing 80kg, size: 1.70m, body mass index: 27,68kg/m<sup>2</sup>, admitted for cholecystectomy. In her medical history we found a severe old rheumatoid arthritis long term treated by corticotherapy (prednisolone 30mg/day) and methotrexate 25mg/week.

The clinical examination of the hands shows involvement of the metacarpo-phalangeal and proximal interphalangeal joints of the fingers of both hands responsible for reduced mobility in both hands.

Anesthetic assessment revealed very limited neck movement; thyromental distance :5 cm, Mallampati Class IV airway, and marginal mouth opening of only 2,5 cm. in view of the reduced mobility of the cervical spine, an MRI was carried out showing an atlanto-axial dislocation with no sign of spinal cord injury (Figure 1).

A neurosurgical opinion has been sought and concluded that there is no surgical indication, and the patient was put on analgesics and a neck brace.

The biological assessment was normal: haemoglobin: 12g/dl, Na+: 140mmol/l, k+: 4 meq/l, creatinine: 9mg/l. The cardiovascular examination and electrocardiogram were normal. The pleuropulmonary examination and chest X-ray were also normal.

We discussed with a patient the anticipated difficulties and impending dangers and outcomes of anesthesia and obtained advanced informed consent, for general anesthesia.

The strategy was an awake intubation with a fiberoptic bronchoscope.

On arrival in the operating room, routine monitoring was applied included ECG, noninvasive arterial pressure (SpO<sub>2</sub>), and equipment for difficult intubation was checked and on standby. Two intravenous lines were secured.

The patient was put into dorsal decubitus with a support under the head. Premedication by 0,25 mg atropine to prevent vago vagus reflex. Then a local nasal anesthesia was applied by the nebulization of 4 ml of Lidocaine 5% with 6 l/min of oxygen for 20 min. Bilateral block of the Upper Laryngeal Nerve by Lidocaine 1%, (4 ml per laryngeal nerve) followed by trans-trachéal Instillation a 3ml of 2% Lidocaine. After 20 min A flexible intubation probe number 6, a balloon well deflated, was inserted into the Fiberscope, both lubricated with a KY type lubricant and the suction was plugged in and checked. The fiberscope was introduced through the most permanent nostril, and the fiberscope was gradually moved to the glottis to the carina and then the tracheal intubation by sliding the probe onto the fiberscope, then anestehsia was induced with Fentanyl: 300 microgramme, propofol : 200 mg, and succinylcholine : 48mg. Anesthesia was maintained with sevoflurane. Total duration of surgery was 45 min, and extubation passed without incident after full awakening of the patient.



**Figure 1: MRI on T2 showing an atloidoaxial subluxation (orange arrow) with dense impression on the premedullary space**

## DISCUSSION

RA is a chronic inflammatory disease affecting mainly small joints, but extension to the cervical spine poses a particular problem for anaesthesia.

RA is also a systemic disease with multivisceral involvement, particularly cardiovascular, at the preanesthesia consultation, the existence of RA is an additional cardiovascular risk factor, in addition to the

classic risk factor [2,3], the chronic inflammatory state of the patients favours the development of early atherosclerosis with an increased risk of the occurrence of myocardial infarction and sudden death. Pericarditis is the most common cardiac problem, although 45% of patients may be asymptomatic, hence the interest in requesting an ECG or even an echocardiography before the operation [4].

Pulmonary involvement may be related to treatment or to infection secondary to immunosuppression favoured by methotrexate, which may be responsible for acute interstitial lung disease and pulmonary fibrosis [5], hence the importance of requesting a frontal chest X-ray preoperatively.

Patients with RA also have renal involvement (glomerulonephritis) and immune system involvement, often increased by long-term corticosteroid therapy, immunomodulators (anti TNF) and immunosuppressants, resulting in increased susceptibility to perioperative infections, which requires strict adherence to perioperative antibiotic prophylaxis.

A pre-operative assessment must take into account the renal assessment, the hepatic assessment (hepatotoxicity of non-steroidal anti-inflammatory drugs), the nutritional assessment (albuminemia), an 8-hour cortisol level (risk of adrenal insufficiency secondary to prolonged corticotherapy).

Inflammatory anemia is often present, associated with a high cardiovascular risk in these patients, requiring an effective blood-sparing strategy.

Another issue that arises at the pre-anaesthetic consultation is the management of RA drugs. For MTX the literature has concluded that it should be continued unless there are other comorbidities such as diabetes or latent infection in which case MTX can be stopped one week before and one week after surgery.

Corticosteroids should not be stopped preoperatively, but rather hydrocortisone hemisuccinate (HSHC) should be given to prevent the risk of postoperative adrenal insufficiency. The dose of HSHC to be injected depends on the aggression of the surgery. Sulfasalazine, azathioprine or hydroxychloroquine are not also stopped except on the day of surgery.

The choice of anaesthetic technique depends on the type of surgery and the preanaesthetic assessment. Loco-regional anaesthesia should be preferred if the surgery allows it, to avoid dangerous or difficult intubation. It appears that peripheral nerve blocks in RA patients are more difficult to perform, with a longer time to set up, a sensory block is often prolonged and the risk of complications is higher [6, 7], hence the need to perform peripheral blocks under ultrasound and neurostimulation.

One of the major complications of RA is the destruction of the cervical joints. Usually, the severity of cervical spine involvement is related to the progression of peripheral joint involvement, particularly in the hands, feet, hip and knee [8]. Rheumatoid cervical spine can be complicated by atlantoaxial dislocation (AAD), which can manifest as pain radiating to the occipital region, slowly progressing to spastic quadriplegia and transient

episodes of spinal cord dysfunction [9, 10], which is why it is recommended that a neck X-ray be requested preoperatively to detect spinal instability even in the absence of neurological symptoms [11], although some believe that this practice is expensive and unnecessary [12, 13]. When general anaesthesia is required, vigorous intubation with a fiberoptic should be preferred [14, 15], as direct laryngoscopy is dangerous and excessive neck flexion can cause medullary compression in patients with AAD. The laryngeal mask may be an alternative to intubation without head and spinal mobilisation in some patients if the mouth opening is sufficient.

Peroperatively there is a high risk of neurovascular compression in these patients [16], and the head should be kept in a neutral position to avoid the risk of subluxation between the atlas and the axis [10] monitoring and maintenance of body temperature is important as the frequency of Raynaud's phenomenon is high in this population.

Postoperatively Pain management does not differ significantly from a patient without RA. Multimodal analgesia combining paracetamol and NSAIDs with other available drugs (nefopam, tramadol) is preferred; the use of morphine at the minimum effective dose because of the risk of accumulation due to renal insufficiency often present in patients with RA.

The existence of cardiovascular DRFs associated with RA requires troponin blood testing immediately postoperatively and daily for the first 72 hours.

## CONCLUSION

An accurate and focused anaesthesia consultation is essential in the management of a patient with RA. It allows the risk of difficult or dangerous intubation to be assessed or dangerous intubation and to plan the right alternative: ALR or intubation under a fibroscope. It allows us to know associated comorbidities in order to ensure a safe operative procedure following the recommendations.

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