

ROTATION PROGRAM. ANESTHESIOLOGY AND PAIN TREATMENT. IMSKE HOSPITAL

Introduction

The specialty of Anesthesiology, Resuscitation, and Pain Therapy is a special area of medicine, which, as the name indicates, includes 3 sub-specialties with specific contents and goals:

1. ANESTHESIOLOGY
2. INTENSIVE CARE UNIT
3. PAIN THERAPY

Our highly specialized center concentrates exclusively on musculoskeletal pathologies. The medical residents (MIR, in Spain) who come to our center should aim to acquire both technical and non-technical skills in this area especially.

The surgical interventions performed at our clinic are:

1. Prosthetic hip replacement surgery: primary arthroplasty and replacement surgery.
2. Knee replacement surgery: primary arthroplasty and replacement surgery, prosthesis (arthroscopy, etc.).
3. Spinal surgery: dorsal lumbar and cervical arthrodesis.
4. Shoulder surgery: total prosthesis, arthroscopies (MAS ; ICU).
5. Surgery of the hand and foot (MAS).
6. Brachial plexus and peripheral nerve surgery.
7. Trauma and orthopedic surgery (ICU).

General Objectives

The general objective of the rotation is to assist in training specialists to develop the ability to provide adequate treatment for patients suffering from musculoskeletal pathologies, whether the patient's surgical pain is managed perioperatively or intraoperatively, or through conservative management by a specialized pain unit.

The goal of this in-person training is to acquire clinical experience in all of our hospital's units, according to the program elaborated by the National Commission of Specialization approved by Resolution of the Secretary of State for Universities, Research, Development and Innovation of the Spanish Ministry of Science, Innovation and Universities, dated 25 April 1996 (Royal Decree 127/84).

Residents will acquire healthcare skills based on the best available evidence and applicable to any type of patient. This will enable them, as specialists, to perform tasks associated mostly with loco-regional anesthesiology, as well as with acute and chronic pain treatment.

Communicative competencies:

Residents will acquire the communication and leadership skills to allow them to manage various types of human interaction and to avoid or resolve conflicts that arise during their professional activities:

- Open, empathetic, and respectful communication with patients and their families.
- Effective professional communication with other professionals involved in patient care.
- Multidisciplinary teamwork in critical situations and in any work environment.
- Implementation of quality control programs, guidelines, and protocols for safe clinical practice in accordance with the norms currently in force.
- Promotion of and participation in safety improvement initiatives.
- Appropriate and cost-effective use of resources.

Academic competencies:

Residents will acquire the necessary skills to reach and maintain a high level of professional competence:

- Continued training, self-reflection, and critical reading of the most relevant, up-to-date information.
- Acquisition of teaching techniques, basic research skills, and public speaking abilities.

To this end, all residents must give a presentation on a topic – chosen previously in their weekly sessions at the hospital – to be evaluated by the assessment team.

Professional competencies:

Residents will exhibit ethical behavior and be aware of their responsibilities and obligations as medical professionals:

- To deliver high-quality care with empathy, integrity, honesty, and compassion.
- To recognize their own abilities and limitations.
- To make decisions based on ethical considerations and manage possible conflicts.
- To manage anesthetic incidents and near-incidents appropriately.

Objetivos específicos del área de anestesia loco regional.

General Objectives:

- To get to know the organizational structure of the MAS unit and the patient circuits.
- Preoperative assessment: Selection criteria for patients, procedures, and anesthetic techniques in MAS.
- Acceptable limits of the most frequent pathologies, optimal preoperative assessment and management. Application of drug adjustment guidelines (Diabetes mellitus, antiplatelet and anticoagulation, corticoids).
- Anesthetic risk assessment.
- Patient preparation: information and application of protocols for the prevention of PONV and laterality errors, fasting, etc.)
- Social limitations that require in-patient care.
- Basic monitoring.

- Pharmacology and anesthetic techniques in ambulatory surgery that allow for a quick recovery.
- Anatomy of the airway. Assessment of the prediction parameters and selection of management techniques for the non-difficult airway in MAS.
- Awareness, prevention, and treatment of the most frequent complications requiring unplanned hospital admission.
- Knowledge of the indications and rational use of the most common imaging techniques for surgery patients.
- Physical principles of the most common technologies:
 - Conventional Radiology: Ultrasound and simple radiology for loco-regional anesthesia.
 - Planning of the intraoperative monitoring of choice, depending on the aggressiveness of the procedure and the specific pathology of the patient.
 - Awareness of age-related problems: hypertension, diabetes, ischemic heart disease, asthma, obesity, and other endocrine disorders.
 - Awareness of the implications of the pathologies most frequently associated with the specific type of surgery: degenerative arthropathy, rheumatoid arthritis and other rheumatic diseases, biological treatments, etc.
- Knowledge of how to assess the airway.
- Knowledge of the indications and counterindications of regional anesthesia.
- Knowledge of the interference caused by coagulation-altering treatments in anesthesia and surgery.
- Knowledge of how to manage preoperative anemia and the indications for administering intravenous erythropoietin and iron.
- Knowledge of how to anticipate transfusion needs.
- Knowledge of how to assess possible sources of infection in patients receiving prosthetic material.
- Knowledge of how to assess risk factors for deep vein thrombosis and pulmonary thromboembolism. Antithrombotic prophylaxis.
- Knowledge of how to guide preoperative treatment with adequate premeditation.
- Knowledge of how to provide information to the patient and/or family and obtain informed consent.

- Knowledge of how to fill out the pre-anesthetic report, establish the anesthetic plan, and communicate this information to the operating room.
- Knowledge of how to prevent and diagnose postural nerve injuries.
- Knowledge of the implications of the surgical position of the patient in anesthetized patients: supine decubitus, prone decubitus, and lateral decubitus.
- Knowledge of the protection of decubitus positions and the prevention of injuries associated with the patient's position and posture.
- Knowledge of the effects of the tourniquet: hemodynamic and metabolic repercussions.
- Knowledge and application of hypothermia-preventative practices.
- Familiarity with the OrthoPat intraoperative blood salvage device and technique.
- Knowledge of how to manage regional techniques for postoperative analgesia.
- Knowledge of the selection criteria for postoperative analgesia.
- Knowledge of the possible complications arising from various surgical techniques.
- Completion of the anesthetic report and activity data base.
- Knowledge of both the efficacy and monitoring of analgesia. Analgesia for early functional rehabilitation.
- Knowledge of how to manage drainage-based blood recovery systems.
- Knowledge of how to diagnose and treat the following: intraoperative and postoperative bleeding, nausea, and vomiting; hypothermia; post-dural puncture headache.
- Knowledge of how to prevent and diagnose postural nerve injuries.

Theoretical Objectives:

- Anatomical bases.
- Brachial plexus and peripheral nerves.
- Lumbosacral plexus and peripheral nerves.
- Relationships between the vascular, muscular, and skeletal systems along their various pathways.
- Pharmacology. Local anesthetics and adjuvants. Sedation.
- Bases of neurostimulation.
- Basic handling of ultrasound devices in loco-regional anesthesia (LRA).
- Sonoanatomy of plexuses and their peripheral nerves, adjacent structures.
- Complications of LRA techniques

Practical Objectives:

Upper limb block:

1. Interscalene block.
2. Supraclavicular block.
3. Axillary block.
4. WALAN block.
5. TRONCULANT block.

Lower limb block:

1. Femoral block.
2. PENG block.
3. I-PACK block.
4. PVI block.
5. Saphenous nerve block.
6. Foot and ankle block.
7. Sciatic block.

Periarticular vasoconstriction infiltration.

Knowledge of existing protocols:

- Pre-anesthesia protocol in knee surgery.
- ACO management protocol.
- Massive hemorrhage protocol.

Minimum number of procedures to be performed:

- Ultrasound exploration in patients: minimum of 25 explorations.
- Upper extremity: 30 punctures with different approaches: interscalene, supraclavicular, infraclavicular, axillary and peripheral nerves.
- Lower extremity: 30 punctures with different approaches: sciatic, popliteal, femoral, and peripheral nerves.
- Pre-anesthetic visits: 30.

Assessment:

- By the anesthesiology staff.
- Completion of the resident's logbook.
- Assessment by collaborating physician using the checklist from the Ministry of Health and Social Welfare (Online Tutor Book), according to the update in the Official State Bulletin (BOE) number 181, dated 27 July 2018 (Section III, p. 75458).
- Resident-tutor interview.

Specific objectives in the area of pain management.

Theoretical objectives:

- Knowledge of the various types of pain. Nomenclature, anatomy, physiology, and pathophysiology of pain.
- Knowledge of semiological and etiological diagnostic methods. Diagnostic tests.
- Knowledge of pain scales and questionnaires.
- Knowledge of the pharmacology and pharmacodynamics of analgesics. Dosage and administration routes
 - Opioids: types, titration, conversion according to administration route. Adverse effects.
- Knowledge of how to manage non-opioid analgesics: Classification Indications.
- Knowledge of how to handle adjuvants: Adverse effects.
- Knowledge of the general principles of acute postoperative pain management.
- Prevention of the appearance of chronic pain: Physiopathology and treatment.
- Knowledge of the general principles of chronic pain management: WHO analgesic scale:
 - Somatic pain: pathophysiology and treatment.
 - Neuropathic pain: pathophysiology and treatment.
 - Oncological pain: pathophysiology and treatment.

Entity diagnosis and treatment plan:

- Cervicalgia.
- Acute/chronic low-back pain.
- Lumbosciatic pain – radicular nerve pain.
- Crushed vertebrae. Vertebroplasty.
- Diabetic polyneuropathy.
- Herpes zoster and post-herpetic neuralgia.
- Trigeminal neuralgia and other atypical facial neuralgias.
- Regional pain syndrome complex types I and II.
- Phantom limb pain.
- Core pain.
- Visceral pain.

Knowledge of special treatments: mechanisms, indications and limitations, and diagnosis and management of the adverse effects of:

- TENS (transcutaneous electric nerve stimulation).
- Botulinum toxin.
- Specific blocks. Anatomical references, neurostimulation, ultrasound.
- Spinal infusion pumps (epidural or intrathecal).
- Posterior cord stimulation.
- Radiofrequency ablation.

Knowledge of the necessary documentation and how to inform the patient of the indicated treatment.

Practical objectives

- To obtain a complete medical history: personal history, pain history, physical examination, and assessment of complementary tests. Differential diagnoses and diagnostic orientation. Treatment algorithm. Indication of additional tests or consultations with other specialists.
- To carry out follow-up visits: evaluation of previous treatment. Indication of invasive pain techniques; performance of these techniques or collaboration in carrying them out. Subsequent visits.
- To carry out acute postoperative pain visits: pain assessment and treatment modification, if necessary. Programming and monitoring of PCA pumps. Catheter monitoring.
- To carry out and collaborate in the application of invasive treatment techniques.

Minimum number of objectives to perform:

- Initial chronic pain visits: 5
- Follow-up visits for chronic pain: 10
- Collaboration with and participation in intervention techniques: 30

Assessment

- By the anesthesiology staff of the pain unit.
- Completion of the resident's logbook.
- Assessment by collaborating physician using the checklist from the Ministry of Health and Social Welfare (Online Tutor Book), according to the update in the Official State Bulletin (BOE) number 181, dated 27 July 2018 (Section III, p. 75458).
- Resident-tutor interview.