DOCTOR DEGREE

ANATOMOCLINICAL, IMAGISTIC AND THERAPEUTIC CONSIDERATIONS IN RHINOSINUSAL PATHOLOGY

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KEY WORDS

Nose, Sinuses, Rhinosinusal Pathology, Endoscopy, Diagnostic and Therapeutic Algorithm

INTRODUCTION

Rhinosinusal pathology occupies a top position in incidence, costs and impact on quality of life, being involved in almost every sphere of otorhinolaryngology sufferings. The interpretation and correct knowledge of this pathology in the context of its current development, in direct relationship with border areas pathology and with its participation in the suffering of the entire respiratory system, is necessary and appropriate in the interest of a correct diagnostic and therapeutic attitudes.

GENERAL PART

The general part contains a detailed study on the anatomy of lateral nasal wall and paranasal sinuses, the physiology and rhinosinusal physiopathology, the endoscopic techniques for diagnosis, modern imaging methods and appropriate treatment.

The update of the concepts of anatomy of the nose and paranasal sinuses allows the establishment of basic endoscopic landmarks and the identification of flawed positions and anatomical imponderables with an important role in the empowerment of rhinosinusal pathology.

Normal rhinosinusal physiology depends on the integrity of the mucociliary excavator and the ostial patency, any disturbing factor inducing prolonged obstruction of the ostiomeatal complex with retention of secretions, appearance of mucosal edema and maintenance of a vicious cycle of inflammation.

Complex imaging investigations, such as computerized tomography or nuclear magnetic resonance, provide a real map of the rhinosinusal structures, facilitating the accurate description of the relationship between lesion and adjacent structures, warning of proximity to areas of risk and conferring the possibility of giving a precise surgical therapeutic gesture.
Modern techniques of endoscopy manage to offer detailed mapping of areas with major impact on production or maintenance of chronic rhinosinusal suffering. Use of endoscopic examinations performed with flexible or rigid endoscopes fibroscopy lead to identifying specific areas of sinus blockage, detecting high deviation of nasal septum, presence of a concha bullosa, of a paradoxal curved medium cornet or of a polypoid degeneration of the meatal area.

Benefits and limits of surgical techniques, classic or endoscopic, tailored to each entity: malformation, trauma, inflammation and tumor are being observed.

PERSONAL PART

Material and method

Patients in the study group were selected from all patients hospitalized with severe diseases of rhinosinusal area within the ENT Clinic of Emergency County Hospital Craiova between 2000 - 2009.

The clinical selected cases gave consent for participation and inclusion in the research plan, in compliance with the Helsinki Convention. Patients were informed about the detailed steps of the clinical trial, risks and benefits, therapeutic plan and procedures for tracking and outcome usage.

Patients were selected based on anamnesis, clinical and endoscopic examination imagistic investigations.

The material on which the research was centered was represented by the patients’ clinical observation sheets, the accompanying documents showed in the emergency room, the codicils and surgical protocols, the registers of histopathology bulletins, the registers with the results of bacteriological and mycological examinations and the imagistic examinations photocopied in the ENT Clinic of the Emergency County Hospital Craiova.

The study method used was the clinical statistical one, retrospective, based on a mixed analytical and descriptive research, represented by an examination of biostatistics and mathematical variables investigated in relation to disease.
The examination of patients was done methodically, according to a protocol well-learned, monitoring the correct diagnosis and appropriate treatment.

It followed a standard protocol for inclusion in the squad, based on the attribution of a type form for each clinical case, which included: anamnesis, clinical ENT examination, endoscopic examination, general clinical examination, paraclinical, biological and imaging examinations, applied treatment.

Therapeutic effectiveness was objectively measured based on the expression of ratio of obtained results (cured patients, recurrences, relapses, deaths) and biological costs in a given period of time.

**Results and discussions**

In the casuistry of the ENT Clinic of Craiova, in the period 2000-2009, patients with rhinosinusal diseases had a higher incidence, representing 43.72% of total admissions.

The inflammatory rhinosinusal pathology was predominant, with a rate of 56.74% (acute inflammation 14.94%, chronic inflammation 41.80% and complications of the rhinosinusitis 2.47%), followed by malformative pathology, trauma and tumor.

The age groups most frequently affected were 30-39 years and 40-49 years, representing 46.22% of the total, the least affected were under 10 years, 10-19 years and over 60 years age groups (23.06% of total).

Rhinosinusal pathology affected mainly men - 58.15%; concerning the provenience environment, the incidence was almost equal.

Symptoms caused by rhinosinusal affections were dominated by nasal obstruction (malformative, traumatic, inflammatory and tumoral pathology), muco-purulent rhinorhea (inflammatory pathology), headache (inflammatory, tumoral pathology), and deformation of fronto-ethmoid region (mucocele, benign and malignant tumor pathology).

Anterior rhinoscopy guided the diagnosis and paraclinical investigation plan, noticing the pathological aspect of the nasal septum and the nasal lateral wall, and the endoscopic rhinosinusal examination allowed detection of concealed signs of inflammation in the middle meatus, the location of the mucus drainage channels and viewing options or anatomical imponderables with pathogenic significance.
Conclusions

1. Rhinosinusal pathology therapeutic management included both preventive measures and appropriate therapeutic approach in duration, dosage and surgical approach.

2. Treatment of nasal septum deviation (95.06% of rhinosinusal malformations) was essentially surgical, practicing resections of the nasal septum by Killian procedure, procedures derived from or only repositions of the diverted portion.

3. Simultaneously to the intervention on the nasal septum, for solving the nasal obstruction there were performed mucotomies of the inferior turbinate, endoscopic guided ablation of the accompanying polyps and medium meatotomy with recovery of ostial patency.

4. Septoturbinary synechiae (4.48% of rhinosinusal malformations) received surgical treatment with placement of partitions stents made of photographic film, maintained at least a month.

5. Choanal perforations (0.41% of rhinosinusal malformations) were confirmed by the CT scan which indicated the bone or tissue character of obstruction and received surgical interventions consisting of drilling membranous or bony defect with trocar, widening the hole and its recalibration with a polyethylene tube extracted through a controlateral fossa, maintained for 3 months.

6. Trauma of the nose and paranasal sinuses, more frequently occurring in men (69.9%), determined different types of lesions, depending on the nature and extent of the vulnerable agent, the direction, intensity of impact and bone resistance.

7. Wounds (46.06% of the trauma of the nose and sinuses) have benefited of disinfection, exploration, hemostasis, careful excision of portions of devitalized tissue, suturing in anatomical planes, antibiotics and tetanus prophylaxis.

8. The treatment of nose fracture (32.50% of injuries) was aimed at combating the obstruction and resumption of ostial patency, by reducing outbreaks of fracture, with internal contention with over posed hairpieces or expanding materials, combined with external contention plaster splint, held 5-7 days under broad-spectrum antibiotics, anti-inflammatory, hemostatic, and painkillers.
9. Treatment of septal hematomas and abscesses (6.68% of the trauma) was exclusively surgical and consisted of incision, disposal and bilateral drainage collection, recollection being prevented by closely anterior bilateral padding, maintained 48 hours and repeated in case of relapse.

10. Paranasal sinus fractures (7.44% of injuries) received surgical treatment of instrumental reducing fracture, followed by contention with intrasinusal compressive padding, kept 5-7 days under antibiotic protection.

11. Nasal foreign bodies (7.32% of the trauma) were extracted with the hook abutment surface special problems being raised by the rhinoliths with coraliform surface (5.97% of nasal foreign bodies), cases in which it was necessary transnasal fragmentation and then extraction with a special clamps with serrated beak.

12. Restoring sinus cavity drainage and aeration, with the resumption of mucociliary clearance, of the rhinosinusal acute inflammation (14.94% of rhinosinusal pathology), was based on topical nasal decongestant treatment, supported by antibiotics administered according to the bacteriology of the each case, and to the antibiogram, or estimated by the current prevalence of resistant bacteria, in concordance with the latest therapeutic guidelines of the European Society of Rhinology (ERS) and American Drug Agency (FDA).

13. Rhinosinusal chronic inflammations (41.80% of the rhinosinusal pathology) were secondary to prolonged obstruction of the ostiomeatal complex and the retention of sinus secretions, with enhancing mucosal edema and maintaining a vicious cycle of infection and inflammation.

14. Repeated rebound chronic rhinosinusitis treatment was multimodal: local, with decongestant solutions, topical corticosteroids, lavage with saline solutions, therapy with solutions for aerosols; medical, with antibiotics administered for 10-21 days, in combination with non-steroidal anti-inflammatory, antihistamines and analgesics; surgical, in case of medical treatment failure.

15. Rhinosinusal chronic inflammations received guided endoscopic surgery, based on the concept of functional endoscopic surgery proposed by Messerklinger and Stammberger, of ablation of the hypertrophied mucosa of the medium meatal area and correction of anatomic imponderables (increases septum, concha bullosa, paradoxal curved middle turbinate, accompanying polyps) responsible for the empowerment of sinus lesions.
16. Cases diagnosed with orbito-ocular complications (96.85% of rhinosinusal complications), the discovery of a collection highlighted by CT or MRI, the worsening of symptoms with deterioration of visual function, the orbital mounting signs, the lack of response to medical treatment for 48-72 hours, signs of recurrence or extension of the infection process to the contralateral eye, required radical surgery.

17. Treatment of nasal polyposis (10.82% of rhinosinusal pathology) was multimodal: medical (topical intranasal corticosteroids, antihistamines, platelet antiagregrants, systemic corticosteroids, antibiotics), surgery (endoscopic-guided conventional polypectomies followed by ablation of degenerate edematous mucosa, tissular source of recurrences, with restoration of sinus drainage) and preventive (allergen avoidance, specific immunotherapy desensibilization and relapse prevention medication).

18. Characterized by a wide variety of anatomo-pathological forms, benign tumors developed in the nose and paranasal sinuses (1.34% of rhinosinusal pathology) have received, according to location, size and invasion, excision by endoscopic surgery or classical techniques.

19. Inverted papilloma (8.76% of nasal tumors), benign by histological nature, but with malignant character by capacity of rapid extension, increased risk of recurrence and real malignant potential, was surgically approached by paranasal rhinotomy, providing optimum visibility for the removal of the tumor together with the neighborhood rhinosinusal mucosa, the scraping the of the implant surface and strict control of the lesion.

20. Malignant rhinosinusal tumors (0.38% of rhinosinusal pathology), characterized by high aggression, have benefited, in the early stages of disease, of surgical treatment, with mixt approaches, paranasal, transantral and transnasal, followed by radiochemotherapy oncology treatment.

21. The research of the way in which anatomical imponderables influenced the rhinosinusal symptomatology, the interconexion of imaging with pathological aspects and the study of each type of rhinosinusal disease, correlated with review of medical treatment and surgical procedures, classic or endoscopic, have led to the elaboration of a diagnosis and treatment guide of patients with rhinosinusal suffering applicable in the Craiova ENT Clinic.
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