

3. EAR, NOSE and THROAT DISEASES

In medical practice in tropical Africa, ear, nose and throat diseases are generally underrated or treated as unimportant. This is a great mistake. The number of consultations is high. As for example, Kigali's ENT unit saw 60,000 new patients between 1970 and the end of 1982.

These disorders cannot be considered as ordinary or common, for they lead to variable degrees of deafness in a significant proportion of patients. In Central Africa, 5.3 % of the population – some 45 million people – present a hearing handicap. Although this handicap may not be immediately noticeable, it must remain a real concern as most hearing disabilities can be prevented by treating runny ears, which are easy to recognize and can be controlled by simple means.

Even if it appears a hidden handicap, still it is not a minor one. Especially in Africa, the spoken word remains the leading means of communication. Moreover, a significant proportion of the cases of deafness can be prevented. The immunization campaigns by WHO's Expanded Programme on Immunization (EPI) conducted against measles, German measles, meningitis, and the control measures to check enteric infections should reduce substantially the incidence of otitis.

In some areas with dry, dusty climates, up to 90% of the children have runny ears. During the rainy season or in humid areas, the prevalence of middle ear infections deriving from nasopharyngeal infections is just as high and often involve also the middle ear.

No special training is needed to recognize otitis, characterized by a discharge of the ear and a perforated tympanic membrane. If the infection becomes chronic, the fibrosis and scarring lead to deafness. This can be avoided by simple means if the parents are informed of the dangers of ear infections and if the means to treat them are provided. These infections belong typically to the field of primary health care.

Attention should also be drawn to the dangers of acoustic trauma, as well as to congenital deafness due to intermarrying, especially among cousins.

Initiatives to control such handicaps, as promoted by WHO and UNICEF's joint impact programme, must be encouraged. The Gambian Hearing Health Project and the Commonwealth Societies for the Deaf are additional models to follow.

There arose recently an international awareness of the Third World's needs for the care of the ear, nose and throat disorders, especially of the problems of the deaf and mute, as testified by the activities of the International Federation of Oto-rhinolaryngological Societies (IFOS). We can therefore hope that the problems related to deafness, muteness, and deaf-mutism will get better attention in the not too distant future. What is required is more knowledge of their aetiologies and of the solutions made possible by available the human, technical, and material resources. Further, a marked emphasis on prevention is essential, together with an alert cooperation at the most peripheral level.

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HISTORICAL BACKGROUND

During the early development of medical services in Central Africa, ear, nose and throat diseases could not be a priority. However this field was not completely neglected, as the complaints represented a considerable proportion of the day-to-day ailments. These problems could in general be solved by simple means.

One of the first problems to call for attention was diphtheria. The occurrence of *Corynebacterium diphtheriae* was proved in 1919 by *Van den Branden*. In Europe this germ was the cause of many deaths and great distress, and was therefore feared by parents and doctors. In tropical Africa, the practitioners expected to face also a malign ulcerous sore throat and suffocating diphtheric pseudomembranes, leading to laryngeal diphtheria. Laryngeal *croup* had been feared everywhere since the XVIIth century, but was not often seen in Africa.

The first cases confirmed by isolation of the bacilli were recognized among European children. The first patient had been infected by his mother, and both of them died. The children who had been found infected had all been living in Africa for more than two years or had been born there (*Guérin and Mattlet, 1929; Corman, 1934; Nelis et al., 1936; Bourguignon et al., 1939*). In all these publications, attention is drawn to the unusual clinical aspect: conjunctivitis, rhinitis and rhinopharyngitis with pseudomembranes, dyspnoea, cyanosis, sometimes sore throat with extensive pseudomembranes. Laryngeal *croup* and post-diphtheric paralysis are rare.

As soon as the medical officers were able to define by the Schick test the proportion of the Congolese who had the necessary level of antitoxins to react to the test, they were struck by the fact that 20 % of the adults, 14 to 20 % of adolescents, 23 % of school age and 50 % of younger children were positive. The spontaneous immunization appeared to be much higher and earlier than in Great Britain and the United States (*Vincent, 1956, on an analysis by Brutsaert*).

From then on the question was raised on the origin of this natural reaction. The detection of germ carriers in the surroundings of patients proved invariably negative, the only exception being a child that had been cured, which remained a carrier. On the other hand *C. diphtheriae* were detected among the germs of skin ulcers (Veld sore). Germ carriers had to be numerous although they would not be detected by a throat swab. This is of great epidemiologic consequence.

When performing a thorough bacteriological study, including the toxigenic capacity of the *C. diphtheriae* strain, *Courtois* and co-workers (1947) have shown that the bacilli belonged to the *mitis* variety. This was confirmed later on.

In 1953, *Delcour* described a small epidemic affecting both African and European children, and even an adult. *C. Diphtheriae* was isolated, also by the author, from skin injuries and from tropical ulcers, for a total of eight virulent strains and 35 non-virulent other ones. These observations of *Delcour* demonstrated how useful tellurite media could be in isolating the germ. The author could also show that Sickle cell patients were at greater risk of infection. In 1956 *Vincent* also mentioned a short epidemic at Usumbura.

It is useful to associate these observations with those of *Grasset* (1952) in the Republic of South Africa, which confirm how much the African picture of diphtheria departs from the classic disease. The *mitis* variety is prevalent, the bacilli are found in skin ulcerations, and specific antibodies are detected in the blood of wild game such as those in the Kruger National Park.

These findings are corroborated by the study by *Beziak* and *Farsey* (1970) in Uganda. They isolated *Corynebacterium diphtheriae* from skin injuries in children:

Cutaneous diphtheria

Year	Number of cases	Deaths
1952-53	344	25
1954	43	8
1955	64	12
1958	61	11

Another interesting problem in the field of ear-nose-throat diseases is rhinoscleroma. Being spread worldwide, it is also observed in Central Africa, but with very unequal distribution. It is limited to the highlands of Kivu, Rwanda and Burundi. The basic study of *Thys* (1956) underlines that no case of rhinoscleroma was observed among forty biopsies of nose tumours from Ituri, but three were seen in samples from Kivu and eight in samples from Ruanda-Urundi. Since then other cases have been detected in the last two countries by *Fain and Falaise* (1957), *Marneffe* (1957; 1959), *Ntabomyura* and *Van de Weghe* (1982). The last authors were able to verify that rhinoscleroma was present in ENT consultations of 3.3 per thousand patients.

MAJOR CHALLENGES

1. Introduction

The ENT disorders are located in the upper respiratory tract and adjoining cavities (sinuses, middle ear, etc.). The diseases result from reactions of the rather homogeneous linings and tissues of the respiratory tract to the attack by pathogenic factors. In the tropics these factors are closely related to both climatic and socio-economic conditions.

The symptoms depend on the organs and tissues involved and on the functional impairments, with their often complex inter-relationships. The resulting defects will include congenital or acquired deafness, loss of balance, acute and chronic respiratory disorders, difficult swallowing, modified voice, and disorders of taste and smell. The last two are often associated with nose lesions.

Such simple functional symptoms are recognizable by everyone, at whatever educational level. Care can be given by members of the community at all levels, parents, teachers, paramedics, doctors, and specialists. In addition, the cost of medical care can be minimized by emphasizing hygiene and simple health care before resorting to an expensive specialist. Such an approach is a logical balance between prevention and cure. It offers the best chance of getting good results and it is able to improve the fate of millions of people.

Entirely satisfactory ENT statistics cannot be furnished. Indeed, the available statistics come from hospital records and consequently reflect only serious or chronic cases. Most of the patients who turn up come from the immediate neighbourhood; the psychological threshold for seeking such medical care is much too high for those who live far away from a hospital.

The picture is dominated by infectious diseases, which account for 53% of the cases seen at Kigali Hospital (Ntabomvura and Van de Weghe, 1982). Of these, 35% are primary or acute cases and 18% secondary cases. Tonsillitis and otitis media account respectively for 17% and 10%, of the acute cases. Public health measures are therefore able to greatly improve the disorders.

2. Sore throat or acute tonsillitis

Acute tonsillitis is characterized by white spots on the tonsils, fever, and difficulty in swallowing. It accounts for 17% of the acute ENT infections in Central Africa. The course is less severe than in Europe. A variable proportion of the cases consists of ordinary viral infections requiring a simple treatment of the symptoms (see p. 698). Streptococcal tonsillitis gives

rise to a growing number of late complications such as glomerulonephritis (see pp. 1150-1151), rheumatoid arthritis, and valve lesions of the heart (see p. 850).

Antibiotics may be indicated; but the people must be warned of the dangers of using antibiotics without discrimination. Such a practice tends to spread as soon as supplies of antibiotics have arrived. Withdrawing an antibiotic sometimes suffices to put an end to a persistent sore throat.

Recurrent tonsillitis can legitimize tonsillectomy.

Infectious mononucleosis is a common cause of acute tonsillitis and is associated with a maculopapular rash in 90-100% of the patients having taken ampicillin.

Acute pharyngitis is often one of the presenting manifestations of the African viral haemorrhagic fevers, that is, Lassa, Marburg and Ebola fevers (see pp. 1381 to 1396).

Underlying diseases such as agranulocytosis or leukaemia and lymphoma must be considered in each patient with persistent or recurrent tonsillitis/pharyngitis.

Deep fascial space infections

Oropharyngeal infections may extend to fascial spaces of the lower part of the face and upper portion of the neck and produce severe infectious complications (Chow 1990). The commonest are the retro- and lateral-pharyngeal abscesses and the indurated cellulitis of the floor of the mouth involving the sublingual, submaxillary and submandibular spaces, the so-called *Ludwig's angina*. These life-threatening conditions require high doses of broad-spectrum parenteral antibiotics, airway monitoring, intubation or tracheotomy, if estimated necessary (see p. 1118), and surgical drainage.

3. Plaut Vincent's angina

This form of angina is frequent, with a more serious course than usual if there is a lack of hygiene. Infection due to fusobacterium-spirochaetal association is often limited to one tonsil. There is a sharp pain, slight fever and a satisfactory general condition. Dental care can prove as useful as antibiotics.

4. Diphtheria

Classic diphtheria with false membranes, even with a laryngeal croup-like complication, exists beyond the shadow of a doubt. The false membranes can extend

beyond the tonsils, leaving a raw, bleeding surface in their wake.

Corynebacterium diphtheriae has been isolated on various occasions, but, as detailed in the historical background, the disease has a very low prevalence and epidemics are rare. This is attributed as explained to the widespread existence of *corynebacteria* on the skin, which could lead to the development of heterologous protective antibodies. Anatoxin and vaccination against diphtheria are definitely indicated.

5. Enlarged adenoids

The adenoids enlarge quickly in poor hygienic conditions. Their removal may be recommended at a fairly young age.

The often atrophied tonsils can easily constitute ignored sites of infection in adults.

6. Rhinitis

Cases of rhinitis are frequent and are not usually dangerous.

6.1. Infectious rhinitis

a) Acute catarrhal cases are of viral origin (Echovirus 28, Coxsackievirus A21) and often subject to bacterial superinfections. Such forms of rhinitis also predispose to sinusitis, laryngitis, and otitis.

b) Chronic rhinitis, epistaxis, destruction of the nasal septum and cartilages, atrophy of the anterior nasal spine are all complications characterizing advanced lepromatous leprosy.

Early yaws may produce *goundou*, a condition corresponding to an osteitis of the nasal bones, while late stage yaws may induce *gangosa*, an ulcerating necrotic rhinopharyngitis resulting in some cases in complete destruction of the nasal and perinasal areas (see also p. 1835).

Other infectious diseases from Central Africa occasionally involving the rhinopharynx include aspergillosis, histoplasmosis and rhinophycomycosis (see pp. 560 to 563).

6.2. Allergic rhinitis

Hay fever or a common cold is a vasomotor reaction triggered by a wide variety of allergens. The diversity of causes is underscored by the identification of more than 2,000 allergens in Buganda. As everywhere in Africa, allergens arising from plant materials, as

pollen of recently introduced species, seem to be the most frequently incriminated. One must also add the spores of fungi, household dust, and the acarids (Arthropods) that such dust may contain (see p. 479 and pp. 1196-1197). These types of rhinitis account for 4 % of medical consultations, and are recurrent and often a source of great discomfort. It is impossible to desensitize the subjects, but antihistamines, DSCG (disodium-chromoglycate), and cortico-steroids are useful. The condition is often followed by asthma, chronic bronchitis, or sinusitis.

6.3. Atrophic rhinitis

The cause of atrophic rhinitis can be congenital, vascular, hormonal, nutritional, or geriatric. Atrophic rhinitis may also follow chronic granulomatous infections, such as leprosy, tuberculosis, and syphilis, or an injury, including surgical trauma. The stratified ciliated epithelium is replaced by a single unciliated layer of cells. This leads to complaints of blocked passages, crusting, anosmia, supraorbital headache, and foetor. Moreover, the membranes become a choice site for the deposition of insect larvae, for which the exudate provides an excellent growth medium. The larvae can be removed by hand.

6.4. Ozaena

The atrophic rhinitis can, at an advanced stage, lead to ozaena, possibly caused by a bacterium, *Klebsiella ozaenae*. Treatment gives disappointing results. The patient must be taught to treat himself by the daily rinsing of the nasal cavities.

Ozaena occurs frequently in young girls.

7. Epistaxis

Nose-bleeds are commonplace and generally harmless. They are only serious when there are complications of infections such as relapsing tick-borne fever, typhoid fever, and malaria.

8. Rhinoscleroma

This poor man's disease is especially frequent in young adults living in poor conditions. It was described by *Von Hebra* in 1870.

The condition starts as a diffuse infiltration of the nasal mucosa, like a common cold, but can spread to the septum, the turbinate bones and the sinus holes.

The onset is marked by an exudative phase with mucosal congestion, nasal congestion, and rhinorrhoea.

Klebsiella rhinoscleromatis can be identified at this stage, but as a rule anatomopathological examination of a biopsy section or smear will give a more reliable diagnosis.

This phase is followed by a granulomatous reaction. Nodules are growing and are at first soft but become firm, and are quickly vascularized, filling the nostrils and can obstruct the nasal cavity or even protrude but also cause malformations of the bony wall. The enlarged nostrils and nose give the picture of a globular nose of Hebra. This course culminates in fibrosis, causing narrowing of the nasal passages and malformations of the nose. However, the inflammatory phase can also lead directly to atrophy. Generally the process does not involve the nose cartilage and bone.

The lesions are more frequent in young individuals. The pharynx and larynx, even the bronchial tubes, can be involved.

Such a complication can finally lead to mechanical obstruction of the upper respiratory tract. Regression is possible, leading to cure; but relapses may also occur. Inflammatory tissues are composed of plasmocytes and specific histiocytes with vacuoles in which *Klebsiella rhinoscleromatis* are observed. These are thought to be the cause of the disease although experimental transmission could never be obtained.

Streptomycin is indicated for treatment. If it has no effects after two months, one should, if possible, run antibiotic sensitivity tests or else try tetracycline or clotrimoxazol. Rhinoscleroma is frequent in Rwanda, especially in the west, as well as in the area of Kibungu, always above the 1,000-meter isohyet. A study of its incidence could be of invaluable assistance in enlarging our knowledge of this condition.

9. Sinusitis

Sinus infections are seldom seen in the acute phase. Chronic sinus infections are frequent but often undetected. They are important because of their relationship with chronic bronchitis and asthma.

10. Foreign bodies, myiasis and other parasites

Foreign bodies account for 2.5% of the cases seen in consultation rooms. They are well tolerated in the auditory canal and can persist there for years, sometimes as long as ten years. The foreign bodies themselves are usually beans, peas, peanuts, beads or even small stones.

The use of flexible bronchoscopes has greatly simplified extraction of foreign bodies from the

bronchial tubes (0.8% of the cases) and reduced the associated risks.

Flies such as *Chrysomia* can deposit eggs or larvae in the nostrils or the ear canal where they find a suitable development ground. Ticks, acarid larvae such as otodects, leeches, dog, cat or jackal parasites, and particularly the scabies parasite (Van den Keyning and Thienpont, 1977) can enter the ear canal and provoke irritation.

Retro-auricular distomiasis is caused by *Poikilorchis congoleasis* (see p. 497).

11. Anatomical abnormalities

Among anatomical malformations the deviated septa are very rare. Agenesis of the frontal sinuses is seen in women but agenesis of the maxillary sinuses is very rare.

12. Otitis

12.1 Acute otitis media

Whether or not associated with rhinitis, acute middle ear infection is very frequent in infants and children. The patient often comes at a very late stage, when the ear is already draining. Even in the acute stage antibiotic therapy does not significantly help curing, as there is respectively 73% and 69% improvement with penicillin and a placebo. Automatic administration of antibiotics should be avoided, while if the pus becomes sterile, the reaction progresses to fibrosis and deafness continues. Paracentesis is helpful if the drumhead has been raised by mucopurulent fluid. Such paracentesis is followed in 80% of the cases by recovery in four to five days and the wound will close spontaneously. If the situation is not improved within 48 hours after paracentesis (in the remaining 20% of the cases), a sample of pus must be collected for bacteriological examination in order to decide on the appropriate course of antibiotics.

Otitis in infants (1-5 months) is generally caused by *Streptococcus pneumoniae*, except for perinatal or nosocomial infections, which are usually caused by *Staphylococci* or *Pseudomonas*.

The aetiological agent in children under three years of age (excluding nosocomial infections) is *Streptococcus pneumoniae* or *Haemophilus influenzae*. In children over five, *Staphylococcus aureus* can be added to the list in children over five.

12.2 Myringitis bullosa

Acute otitis media must be distinguished from myringitis bullosa, which occurs in small epidemics. Bullae on the eardrum are caused either by a virus or by *Mycoplasma pneumoniae*.

12.3. *Chronic otitis media* is frequent and treatment yields disappointing results. Antibiotics are useless. The treatment is local and consists of cleansing the ear carefully by means of a syringe filled with physiological saline or a weak alcohol solution (being careful not to insert the syringe too far), followed by drying the infected area with a few drops of 50% alcohol to which acriflavine at 1% may be added.

Chronic otitis media occurs very rarely in association with a cholesteatoma. A subperiosteal abscess or mastoiditis are possible complications.

12.4. *Otitis externa* is a skin inflammation of the ear canal or auricle. Pain occurs immediately but is clearly provoked by touching the auricle. External ear infection can join with otitis media, but is frequently associated to an extended use of eardrops, which upsets the normal flora of the ear canal and paves the way for fungus, yeast, and staphylococcus superinfections. It can also develop from scalp infections. This justifies shaving the head.

Finally, the ears are plagued by a host of irritations by ticks, fly larvae, acarids such as otodects, leeches, and parasites of cats and dogs, but especially the itch mite. These parasites can act as foreign bodies (see above 10).

13. Laryngitis

13.1. *Acute laryngitis* presents no particular signs: the vocal cords are red, while subjective complaints are aphonia, a painful throat, and coughing. The vocal cords must simply take a rest for a few days. The cause may be infection, irritation by smoke or dust, or a strain on the voice.

13.2. *Laryngotracheitis of the young child*, in contrast, is a serious problem. The starting point is often viral; measles has a well-deserved reputation in this area. The extensive congestion is accompanied by copious exudation obstructing the airways which causes dyspnoea and stridor to the point where tubing or a tracheotomy may be necessary. Antimicrobial treatment can have a favourable effect on the symptoms.

Patients presenting suffocating laryngitis should be isolated in a humidified chamber and given oxygen; this often poses serious technical problems.

13.3. *Chronic infectious laryngitis* has still a fairly high incidence. The causes include leprosy, syphilis, fungoid mycosis, and especially tuberculosis, which has not yet started to disappear.

One should also keep in mind that chronic laryngitis can also be caused by an irritant. If rest does not provide the solution, one can resort to stripping under direct laryngoscopy.

13.4. *Tuberculous laryngitis* starts with hoarseness, an irritative cough, and the impression of the presence of a foreign body. Onset may be acute or totally asymptomatic. Difficulty in breathing and swallowing can follow. The lesion is most often restricted to the posterior commissure. The condition may be diagnosed by culturing the bacilli by biopsy, or a tuberculin test. An exhaustive lung examination is a must.

Tubercular involvement of the nose, tonsils, pharynx, and cervical lymph nodes also occurs. Scrofula is not yet a thing of the past, but accounts for 5% of the abscessed cervical lymph nodes seen in children.

14. ENT manifestations of HIV infection and AIDS (H. Taelman)

Although usually asymptomatic, primary HIV infection may be present in less than 10 % of the patients as a febrile flue-like illness or be similar to an infectious mononucleosis with typical acute tonsillitis/pharyngitis and cervical or generalized lymphadenopathies (de Noray, 1993; Colebunders, 1988). Full resolution of these adenopathies occurs in half to two thirds of the cases.

Another ENT condition strongly associated with HIV infection is persistent cervical lymphadenopathy which histologically corresponds to follicular hyperplasia.

Large cervical lymphadenopathies are usually due to tuberculous adenitis, lymphoma or Kaposi's sarcoma, favoured by HIV-induced immunodeficiency (Kabagabo, 1990).

Out of 91 HIV-infected patients with ENT problems studied by *Iyamuremye* in Kigali, sinusitis, pharyngitis and cervical lymphadenopathies were diagnosed in respectively 36 %, 29 % and 23 % of the patients.

Because of their strong association with HIV infection, all these ENT diseases are used as clinical markers in the WHO provisional staging system for HIV infection and disease (WHO, 1990).

15. Oesophagus

Although not forming part of ENT diseases *sensu stricto*, the foreign bodies causing difficulties in swallowing are extracted in children under visual control. Oesophagus tumours can also be discovered by ENT specialists.

16. Tumours

16.1. *Primary benign tumours*

These account for 50% of the cases seen during consultations. Types encountered are ossifying fibromas of the maxillary, which may require broad exeresis, and mixed tumours of the parotid. The latter are often very large, so that their removal involves extensive mutilation.

Parotid enlargement is also observed linked to episodes of malnutrition (Fain, 1947; Dean, Trowell and Davies, 1952; see p. 378).

16.2. *Burkitt's lymphoma*

This particular disease displays some interesting features. It begins before the age of seven and is twice as frequent in boys as in girls. It was identified in 1958. A very plausible relationship with Epstein-Barr virus has been hypothesized, given that 80-90% of the subjects have anti-EBV antibody titres presumed to be significant (see p. 958 and pp. 977-978).

16.3. *Malignant tumours*

They are at the root of 4.5% of the ENT cases that have come to light. The pattern of their geographic distribution deserves more attention.

Squamous cell carcinomas are the predominant ENT malignancy in Rwanda; they affect the tongue, the floor of the mouth (correlated with pipe smoking), the nose and sinuses, and the tonsils. Adenocarcinomas, including those of the rhinopharynx, are also observed. Their incidence in Central Africa is lower than in Southeast Asia but markedly higher than in Europe. The symptoms may be localized to the nose (obstruction, epistaxis), ear (fluid in the middle ear, dizziness), or eye (paresis of the abductor, epiphora, Horner's ptosis). Other symptoms may be linked to the early development of regional or distant metastases. It may be correlated with the Epstein-Barr virus (EBV). Rhinopharynx carcinoma, an epidermoid epithelioma was related also to EBV and has clearly a higher frequency than in Europe.

Oesophagus tumours are frequent in Central Africa. Their prevalence has led to considerable speculation that their cause may be the abuse of adulterated alcohol, but no solid evidence has been produced (see pp. 961-962).

17. Functional hearing loss

Based on recent WHO statistics, the global breakdown of the loss of hearing in the world is as follows: Of the total world population some 4.8 million (0.1%) suffer from profound or total deafness, 9.6 million

(0.2%) from bilateral moderate deafness, and 14.4 million (0.3%) from unilateral moderate deafness. Finally, a total of 254,4 million or 5.3% of the world population have more or less serious hearing defects.

The statistics obtained for Central Africa by V. Ntabomvura and J.P. Van de Weghe (1982) are in line with the global average. By simply adding the infections called chronic catarrhal and chronic purulent infections, one reaches a figure of 6.3%.

Conductive deafness due to injuries or infections causing perforation of the tympanic membrane and disruption of the ossicular chain can be restored by surgery.

Otosclerosis due to ossification of the nuclei starting at the oval window and reducing the mobility of the stapes bone is rare in the tropics.

Sensori-neural hearing loss may be cochlear or retrocochlear. Destruction of the acoustic hair cells in the organ of Corti is irreversible. Moreover, these cells are sensitive to quinine.

18. Prevention

Prevention offers clearly the greatest hope for improvement. It is basically twofold. To start with, there are the vaccinations against measles and diphtheria. These are the major weapons against these two diseases and their complications. Secondly, basic health care must be provided for all who need it, by making this a responsibility of the family, community leaders or teachers. These groups must thus receive information and have the means to carry out their work on a regular basis. They have also to be convinced of the importance of following the rules of basic hygiene, and must be warned of the risks associated with not following them.

This requires training and enrolling various grades of paramedical auxiliaries, who can then be put in charge of instructing the people about prevention, detection of the early signs of disease, and importance of providing early care.

This approach is based on participation at all levels, by parents, teachers, paramedics, physicians, and specialists. Furthermore, the budgetary and financial requirements are lowered at a reasonable level.

The ear, nose and throat specialist has an important part to play in this context. Indeed, if such a programme is to be efficient, it must be based on an accurate epidemiological inventory of the problems to be dealt with, their importance in relation to other ailments, and on the availability of drugs and preventive means.

19. Problems for further study

The International Federation of Oto-rhino-laryngological Societies (IFOS), which unites the national societies of 75 countries, has studied the problem as it relates to Central Africa in particular and to the Third World in general.

It has recommended the carrying out of aetiological studies on endemic and epidemic diseases, taking into account the socio-economic conditions of hygiene, the way of life, of feeding and accommodation, to cover the following problems:

1. Specific and aspecific bacterial and viral infectious diseases, with their causes;
2. Parasitic diseases and their points of entry relating to ENT, the internal ear canal, the nostrils, and the mouth;
3. Tumours and tumour-like conditions, which are known for their extraordinary polymorphism in the upper respiratory tract;
4. Injuries and aetiological factors related to social and religious rites, or to the intrusion of foreign bodies;
5. Immunology, with its still poorly known role in several diseases;
6. Endocrine disorders, sometimes specific to an ethnic group or race, but more often dependent on the environment or diet, as for example endemic hypothyroidism in the Ubangi, Upper and Lower Uele, Idjwi Island, and Rwanda.
7. Ototoxicity, due not only to substances in the diet, but, unfortunately, and increasingly depending on abusive use of aminoglycoside antibiotics and other antibiotics.

Therapeutic choices must be made in view, not only of the funds, but also of the manpower needed for the health services of a given region or country.

The action to be taken at the level of the general practitioner should include the appropriate medical care and emergency surgery, prevention (vaccination) and educational activities organized by the community and by volunteer or professional auxiliaries.

The specialist's duty also includes educating others, especially the front-line physicians, by drawing up a nosological, semeiotic, pathological, and epidemiological summary of ENT disorders and by taking direct therapeutic action.

IFOS created first Standing Committees to focus their efforts under a programme built upon the foregoing elements on otology. Together with the International Society of Audiology and the World Federation of the Deaf, IFOS put forward a motion called "Prevention of deafness and hearing impairment" that was adopted by a unanimous vote at the World Health Organization's General Assembly in Geneva, May 13th, 1981, whereby WHO officially recognized deafness as one of its priorities.

The following classification of deafness or hearing loss has been proposed:

- 1) Profound hearing loss: more than 91 dB (ISO)
- 2) Severe hearing loss: from 71 to 91 dB (ISO)
- 3) Moderately severe hearing loss: from 56 to 70 dB (ISO)
- 4) Moderate hearing loss: from 41 to 56 dB (ISO)
- 5) Hypoacusia: from 26 to 40 dB (ISO)

These categories will be further subdivided on the basis of uni- or bilateral involvement, the loss of voice recognition, conductive and sensorineural troubles, the presence of tinnitus, etc.

Specialized working groups have also laid down widely disseminated precise directives on systematic screening, infectious, traumatic, and genetic aetiologies, and methods for diagnosis and prevention. These directives were widely published.

Similar work is being conducted in the other branches of oto-rhino-laryngology.

Programmes of IFOS and of its branches EUFOS and PAFOS are already operational, for example, in Asia. They are due to be extended to tropical Africa and this is a good sign for the future control of ENT diseases.

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BIBLIOGRAPHY

- BEZIAK V. & FARSEY S.J. (1970), *Corynebacterium diphtheriae* in skin lesions in Ugandan children, - *Bull. WHO*, 43, p. 643.
- BOURGUIGNON G.C., VAN DEN BRANDEN F & GEENS J. (1939), Le problème de la diphtérie au Congo belge, - *Arch. Méd. Soc. Hyg.*, pp. 355-382.
- BROBLY G.W. & ZADIK P. (1987), Bacteriology of otitis media in Ghana, - *Trop. Doct.*, 17, pp. 91-92.
- CHOW A.W. (1990), - *Infections of the oral cavity, neck, and head*, In: MANDELL G.L., DOUGLAS R.G. & BENNET J.E. (Eds), Principles and Practice of Infectious Diseases, Churchill Livingstone, New York, pp. 516-529
- COLEBUNDERS R., GREENBERG A.E., FRANCIS H. & al. (1988), Acute HIV illness following blood transfusion in three African children, - *AIDS*, 2, pp. 643-652
- CORMAN A. (1934), Quelques cas de diphtérie au Katanga, - *Bull. Méd. Katanga*, 1, pp. 4-10.
- COURTOIS G., JANSSENS P. & ZANETI V. (1947), Sur deux souches de bacille diphtérique isolées au Congo, - *Ann. Soc. Belg. Méd. Trop.*, 27, pp. 273-283.

- DELCOUR G. (1953), A propos d'une épidémie de diphtérie à Léopoldville, - *Ann. Soc. Belg. Méd. Trop.*, 33, pp. 569-578.
- de NORAY G., BIRON F., VERRIER B., BOIBIEUX A., BAILLY M.A., BERTRAND J.L. & PEYRAMOND D. (1993), Manifestations cliniques et biologiques de la primo-infection par le virus de l'immunodéficience humaine: revue de la littérature, - *Med. Mal. Infect.*, 23, pp. 643-652
- DOUCET G. (1947), Un cas de diphtérie traité par les sulfamides, - *Ann. Soc. Belg. Méd. Trop.*, 27, pp. 187-189.
- FAIN A. (1947), L'hypertrophie parotidienne chronique chez les indigènes du Congo Belge, - *Rec. Trav. Sci. Med. Congo Belge*, n°7, pp. 75-80
- FAIN A. & FALAISE A. (1951), Myiases des fosses nasales et du sinus maxillaire produites par *Lucilia cuprina* Weidemann, au Ruanda-Urundi, - *Ann. Soc. Belg. Méd. Trop.*, 31, pp. 307-309.
- FAIN A. & FALAISE A. (1957), A propos du rhinosclérome au Ruanda-Urundi, - *Ann. Soc. Belg. Méd. Trop.*, 37, pp. 67-70.
- GUERIN F. & MATTLET G. (1929), Quelques observations qui permettent d'affirmer l'existence du bacille diphtérique dans le Ruanda-Urundi, - *Ann. Soc. Belg. Méd. Trop.*, 9, pp. 31-35.
- HOLBORROW Chr. (1986), Treatment of otitis media and ear infection, - *Trop. Doct.*, 16, pp. 32-33.
- IYAMUREMYE P. (1987), Les manifestations cliniques du SIDA au niveau de la sphère ORL, - *Rev. Médic. Rwandaise*, 20, pp. 56-57
- KABAGABO L., ALLEN S., BOGAERTS J., BATUNGWANAYO J., KAGAME A., NYIRABAREJA A., BLANCHE P., RUTAGANIRA V., RUTIJANA M., ABDEL Aziz M., VAN de PERRE P. & TAELEMAN H. (October 1990), Contribution de l'examen histo-microbiologique des adénopathies au diagnostic des infections associées à l'infection à VIH, - *Vth International Conference on AIDS in Africa*, Kinshasa, [abstract FBP 19]
- MARNEFFE J. (1957), Note clinique sur une association rhino-sclérome-lèpre, - *Ann. Soc. Belg. Méd. Trop.*, 37, pp. 987-992.
- MARNEFFE J. (1958), Ostéomyélite du maxillaire supérieur chez un enfant bantou de 2 ans avec expulsion par voie nasale de germes dentaires définitifs, - *Ann. Soc. Belg. Méd. Trop.*, 38, pp. 81-83.
- MARNEFFE J. (1958), Tumeurs malignes O.R.L. et maxillo-faciales au Ruanda-Urundi, - *Ann. Soc. Belg. Méd. Trop.*, 38, pp. 681-696.
- MARNEFFE J. (1959), Aspects de la rhinite atrophique dite ozène au Ruanda-Urundi, - *ARSC, Cl. Sci. Nat. Méd., Mém.*, 9(6), 85 p.
- MUYEMBE T.L. & MAKULU M.U. (1976), Pharyngites streptococciques à Kinshasa: étude bactériologique et sociologique, - *Cardiol. Trop.*, 2(7), pp. 119-124.
- NELIS P., VAN DEN BRANDEN F. & BOURGUIGNON G. (1936), A propos d'un cas de diphtérie mortel, - *Ann. Soc. Belg. Méd. Trop.*, 16, pp. 507-512.
- NEUJEAN G. (1937), Recherche de la réaction de Schick chez les indigènes de la région de Kitega, - *Ann. Soc. Belg. Méd. Trop.*, 17, pp. 351-352.
- NTABOMVURA V. (1977), Le rhinosclérome au Rwanda, - *Etud. Rwand.*, 10, pp. 131-145.
- NTABOMVURA V. (1977), Faut-il donner des antibiotiques dans l'amygdalectomie?, - *Etud. Rwand.*, 10, pp. 146-153.
- NTABOMVURA V. & VANDE WEGHE J.P. (1982), Morbidité en ORL, in: MEHEUS A. et al.(Eds.), *Santé et Maladies au Rwanda*, AGCD, Brussels, pp. 601-612.
- THYS A. (1956), Le rhinosclérome au Congo belge et au Ruanda-Urundi, - *Ann. Soc. Belg. Méd. Trop.*, 36, pp. 781-792.
- VAN DE HEYNING J. & THIENPONT D. (1977), Otitis externa in man caused by the mite *Otodectes cynotes*, - *Laryngoscope*, 87, pp. 1938-1940.
- VANDE WEGHE J.P. (1972), A propos d'un cas de tumeur maligne chez un nouveau-né, - *Rev. Méd. Rwand.*, 20, p. 7.
- VAN SLYPE W. (1935), La réaction de Schick au Congo belge, - *Ann. Soc. Belg. Méd. Trop.*, 15, pp. 117-118.
- VINCENT M. (1956), Note sur la diphtérie dans la région d'Usumbura (Ruanda-Urundi), - *Ann. Soc. Belg. Méd. Trop.*, 36, pp. 893-897.
- WHO (1990), Acquired immunodeficiency syndrome (AIDS), Interim proposal for a WHO staging system for HIV infection and disease, - *Wkly Epidemiol. Rev.*, 65, pp.221-228

EXAMENS B

- MARNEFFE J. (1958), *Aspects de la rhinite atrophique dite ozène au Ruanda-Urundi*, 69 p.
- VAN NUFFEL L. (1959), *Ziekten van de larynx bij de inlanders van Kongo*, 56 p.

Ph.D. THESIS

- MUYUNGA KASENGULU (1974), *Development and application of speech audiometry using Lingala and Ciluba word lists* (Ph.D. London).