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SPECIAL ARTICLE

Analysis of the otorhinolaryngology services authorized for the training of residents*

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KEYWORDS
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Abstract
The aim of this study was to obtain information on the current educational offer of the authorized Units with the intention of evaluating their teaching capacity and identify their weaknesses and shortcomings. For this purpose an electronic, self-completing questionnaire was sent to the various teaching units. In addition, information on the most important aspects of the management of hospitals was also collected. Fifty-eight forms were received and except for 5 cases the information from the management of the hospitals was also received. The resources for external consultation, the number of special examinations in Audiology, Speech, and Otoneurology, the resources in the operating room and the number of surgical interventions as well as the scientific activity developed in the last 5 years, was outlined. From the figures obtained, some critical areas were identified for the training of current residents in otolaryngology, which were also scored. Considering a threshold of 5 points, excluding the performance of several of these basic requirements, 19 services were below the threshold.

PALABRAS CLAVE
Formación de residentes;
Otorrinolaringología

Análisis de los servicios de otorrinolaringología acreditados para la formación de residentes

Resumen
El objetivo de este trabajo es obtener información sobre la oferta docente actual de las unidades acreditadas con la intención de evaluar su capacidad docente y detectar sus carencias y deficien-

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cias. Para ello se envió a las distintas unidades docentes un cuestionario en formato de formulario electrónico autoaplicable. Además se recabó de la gerencia de los hospitales información sobre los aspectos más importantes. Se han recibido 58 formularios y, excepto en 5 casos, se recibió además información de la gerencia de los hospitales. Se reseñan los recursos en consultas externa, el número de exploraciones especiales en audiología, otoneurología y voz, los recursos en quirófano y el número de intervenciones quirúrgicas, así como la actividad científica desarrollada en los últimos 5 años. A partir de las cifras obtenidas, se determinaron unas áreas críticas para la formación de los residentes en otorrinolaringología, que fueron puntuadas. Considerando una cifra de corte de 5 puntos, lo que excluye el cumplimiento de varios de estos requisitos básicos, 19 servicios quedaron por debajo.

Introduction

The National Otolaryngology Commission has undertaken the challenge of meeting the current status of the teaching units accredited for specialist training in otolaryngology and to this end has carried out for the first time a comprehensive national study on the structure and activity of ENT services accredited as teaching units.

The first aim is to obtain accurate and truthful information about the current teaching offer of accredited units with the intention of evaluating their teaching capacity and identifying their shortcomings and weaknesses. The second is to establish minimum standards for accreditation based on actual figures of resources and activity obtained from the study. It is intended that compliance with these minimums will enable the new Work Training Program in Otolaryngology to be carried out as published in the Spanish Official Gazette on May 8, 2007.[1] This program has been designed in line with the educational requirements of the European log-book and adapted to the demanding needs of modern society and technological development in otolaryngology, replacing the outdated generic criteria of 1984. The intention is that meeting these minimum criteria will ensure a training which is comprehensive, extensive, deep and balanced of the participants in the training program for resident physicians of otolaryngology in all fields of the specialty.

The third objective is to clarify whether the training needs of ENT specialists today is guaranteed with the contents that the program of the specialty is forced to condense into the 4-year duration of otolaryngology residence. The goal is to assess, with the rigor and precision offered by figures, whether there is a basis to substantiate or not the repeated demand from all areas of Spanish otolaryngology to expand the training period and reach a total duration of 5 years. Although so far the demand came only from a clear subjective perception, it found strong support in a range of sources and facts: the European log-book of the UEMS suggested specialist training in otolaryngology to last for a period of 5 years, and the vast majority of the surrounding countries have a period of specialist training in otolaryngology of 5 years.

The fourth objective is to analyze, from the figures obtained in this study, the correlation between demand and supply of otolaryngologists at the present time and for the next three decades, quantifying the number of specialists needed to be trained in otolaryngology. This last aspect is not addressed in this work.

The new program for the specialty of otolaryngology takes into account these circumstances and makes a real effort to introduce relevant contents into the existing formative period of 4 years, which has proven clearly insufficient to deal with them in the desired depth. This program is geared towards the formation of a specialist in general otolaryngology, and leaves for the period after internship the training in subspecialties and specific areas. This program fully accommodates the otolaryngology training requirements from the Otolaryngology Section of the UEMS (Union of European Medical Specialists),[2] although it should be mentioned that the UEMS training proposal in its log-book is cogent in noting that the formative period for otolaryngology should be of 5 years.

Methods

Based on areas of concern that were considered to have influence in the specialized training of otolaryngology residence, the National Commission of Otolaryngology developed a questionnaire which deepened, through numerous items, into measurable aspects of the situation of the teaching units accredited for training in otolaryngology through the residence internship system. The intention was to obtain quantitative results which avoided subjective judgments and also enable objective and rationalized comparisons between centres.

The questionnaire was drawn up on the program Word® in the format of a self-applicable electronic form. For the majority of responses the chance was presented of choosing an option from a dropdown menu, in order to facilitate responses and restrict the answers to a sufficiently broad spectrum yet one manageable for data processing. Each section offered, however, a "memo" space (with free text and unlimited length) so that the person who applied the questionnaire could enter comments or annotations they might consider relevant.

The instructions of the questionnaire encouraged respondents to choose the answer electronically. However, it also allowed the option of filling it out in paper format.

This questionnaire was sent through the Ministry of Health and Consumption, to hospital managements of all centres with teaching units for specialized residence training in otolaryngology. A first wave was conducted in June 2006. A second wave was conducted in October 2006 for hospitals

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that had not submitted the completed questionnaire in the first request.

The questionnaire requested that the hospital activity figures were referred to 2005 and accompanied by an official certification from the management of each hospital to support them (or any other document or certifying system: surgery book, etc).

The results of the survey were loaded into a database designed specifically for this study with the Access® program. In addition to the general table, a specific form was designed in the database to facilitate the input of information and subsequent visualization by hospital and through nine separate tabs by area of interest. 16 reports were prepared which synthesized the information from each study area.

Being an analysis of the situation of otolaryngology teaching units oriented towards appraising their teaching skills, and enable rational criteria for accreditation, it was not considered appropriate to systematically apply statistical measures of centrality and dispersion, and it was decided it was more appropriate to attempt to set measurable criteria of the type "filter–pass" or "threshold" on an orientation located on the arithmetic average.

Finally, given the enormous volume of information obtained, only the most relevant was used in this article.

Limitations of the study

The vast majority of hospitals do not show consistency in indicating when the technical means at their disposal and the activity they develop with them. The lack of hospital records cannot alone justify the lack of figures on strobes, videonystagmography, otoacoustic emissions, etc, and it seems the reason is more due to lack of use, although the form indicates that some hospitals have dedicated staff for those areas.

It is difficult to know whether residents can learn and personally carry out many of the exploration techniques that the services claim to have. Some services honestly claim that some tests are carried out by other hospital services (evoked potentials, otoacoustic emissions, electromyography, etc), but in forms where this is not made clear it is impossible to know.

It is difficult to know what each service interprets as outpatient surgery. Some include in "other relevant surgical procedures" many examples of surgery which is not, although it has little effect in determining the teaching capacity of the service.

In relation to the planning of activities in the services, virtually none coincide in the number of weekly activities that they claim to carry out and the number of consultations and meetings actually available. It might have been appropriate to request the services to submit their planning.

Many services take advantage of the international character of a local event (as has happened with some SEORL congresses) to apply the international nature of their communications and presentations, but do not record any travel abroad.

Many services have reflected as funded research projects those of laboratories and the pharmaceutical industry, and not those from external funding agencies.

Results

In 2008 there were 65 accredited educational units in Spain for ENT specialist medical training (the same as in 2005, the year to which the information on the form is referred).

Fifty-eight forms were received (89% of the otolaryngology teaching units), in both paper and electronic form. The forms of 50 hospitals (77%) include adequate information, and all their information has been included in the data analysis. The remaining 8 hospitals that submitted the form provided only partial information which has been taken into account in matters contained therein and in setting the criteria for accreditation. Finally, 7 hospitals did not submit a form.

Except in 5 cases, information was received from the management of hospitals on surgical activity collected in the hospital databases and in some cases on other aspects of service activity. Only in one case was the form and data not received from the management, so we did not review the service. In case of conflict with the survey data, this properly accredited information was taken as the only valid one when considering the true activity in each major section and assigning the overall score for each service. With respect to this, some cases show the bias that obviously no score has been assigned to aspects on which the appropriate information was not sent, although this, in the case of essential data that formed the basis of the score, was only limited to very specific aspects. It must be considered that in some cases, from the surgical data sent by the hospital management, only the general data from surgical interventions could be taken, since they were grouped in areas related to the diagnostic system or a different coding system which was not accessible. In these cases, only the survey data were considered.

Resources in consultation

The questionnaire includes a large amount of data of which that considered here are only the most relevant, which follows (Figure 1). In each case, the data provide the parameters for which there was valid information, so the denominator is not fixed:

- Tonal and supraliminal audiometries: twenty-one between 500-3000, 9 between 3000-5000, 10 >5000.
- Impedanciometry: fourteen <1000, 13 between 1000-3000, 13 >3000.
- Existence of paediatric audiology unit and dedicated staff: 23/50 (46%).
- Implementation of universal screening of newborns for hearing loss by the department of otolaryngology: 33/50 (66%).
- Implementation of auditory evoked potentials (AEP) by the department of otolaryngology: 47/60 (78%).
- Otoacoustic emissions carried out by the otolaryngology service: 40/56 (71%).
- Implementation of high-frequency audiometry: 14/50 (28%).
- Videonystagmography/Electroneurography (VNG/ENG): 42/54 (78%).

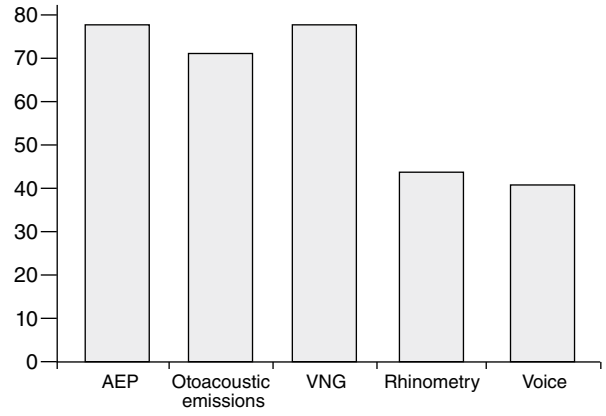

Figure 1 Availability of basic explorations. AEP indicates auditory evoked potential; VNG, videonystagmography.

- Dynamic posturography platform: 7/50 (14%).
- Performance of rhinometry/rhinomanometry: 22/50 (44%).
- Allergic testing by otolaryngology service: 4/41 (10%).
- Performance of olfactometry: 4/41 (10%).
- Polysomnography conducted by the otolaryngology service: 5/43 (12%).
- Stroboscopies: 41/57 (72%).
- Voice analysis testing: 23/56 (41%).
- Otolaryngology Speech Therapy Unit: 10/41 (25%).
- Number of first visits in outpatient hospital clinic (not including non-hospital ones in the area): twenty-seven <5000/year, 18 between 5000-10 000, 5 >10 000.

Special explorations in audiology, otoneurology, and voice

Of the services that consigned having adequate equipment to carry out these special examinations, outlined below are those which carry out an insufficient number of explorations to train residents in this area:

- AEP: 15/47 (32%), which added to those which do not have the equipment makes a total of 47% of the services which cannot train residents in this exploration.
- VNG/ENG: 15/42 (36%), so in total 50% of services are not adequate to train their residents in basic otoneurology.
- Stroboscopy: 11/41 (27%) and voice analysis: 8/23 (35%), so that 73% of services do not have a sufficiently developed voice laboratory to initiate residents in this discipline.

Resources in the operating room

The average number of 4.48 weekly sessions of adult surgery cannot hide the existence of a standard deviation of (1.6), showing a variation coefficient of 0.36. This high variability is determined by the existence of extreme differences between the hospital with more sessions (13) and the 4 hospitals with less (2). Adding all surgical options (adult surgery, paediatric, and afternoon sessions) for each service, an average of 7.22 (4.24) sessions per week is obtained, with 3 services having less than 4 weekly surgical sessions.

Equipment in the operating room

Among the numerous items of instrument available in the operating room, the availability of the most significant is shown:

- CO_2 laser: 43/50 (86%).
- Other lasers: 7/50 (14%).
- Tower of endoscopic sinus surgery (ESS): 50/50 (100%).
- Microdebrider: 40/49 (82%).
- Cranial nerve monitor: 35/50 (70%).
- Radiofrequency: 21/47 (45%).
- Harmonic scalpel: 16/47 (34%).
- Neuronavigator: 12/46 (26%).

Surgical interventions

The total number of surgical procedures was considered according to information received by the managements (57 hospitals) (average, 1013 [range, 443-1775]), with 34 (53%) services below average (Figure 2).

Regarding basic ear surgery (tympanoplasty/stapedectomy), the average was 106 (12-266) operations, with 29 (45%) services below this average.

By taking into account ESS, the average observed was 69 (10-174) interventions, with 28 (44%) services below this.

Moreover, the average of laser surgery operations by pharyngolaryngeal tumours was 21 (3-74), with 22 (40%) services below this. It is remarkable that, in addition, 9 services did not perform laser surgery, generally due to not having the necessary equipment.

In considering oncological surgery, the average of interventions was 71 (22-251), with 27 (42%) services below this average.

Finally, 4 services did not perform paediatric surgery, because the hospitals did not have a mother-child area.

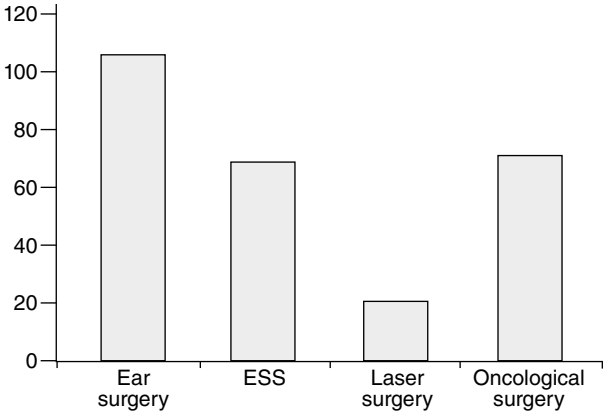

Figure 2 Average number of basic interventions. ESS: endoscopic sinus surgery.

Surgical interventions carried out by internship residents

Most hospitals do not accurately reflect the involvement of residents in surgery, and 9 of them did not provide figures. Moreover, the degree of participation in each intervention is highly subject to interpretation: until what point of an intervention is the internship resident considered a principal or assistant surgeon? For purposes of analysis, all the annual surgery of each service has been integrated into a synthetic single figure, without distinguishing the quality of primary or assistant surgeon. When the total number of interventions by residents exceeds the annual number of interventions of the service, it follows that more than various residents participate regularly in many operations. Certainly this distribution is more theoretical than real, since the surgical load is not apportioned equally among the residents of each level.

The variability found is extreme: the most active resident operates 10.24 times more than the one who does so the least. The arithmetic average of 182 interventions per resident (excluding the services which have not provided data) does not represent a true measure of centrality since both ends have such strong weights (the standard deviation is [215] and the variation coefficient, 1.18).

It is not possible to set a uniform standard governing the division of surgery for each level of internship residence. There are hospitals with a high volume of operations per resident which concentrate them on their last 2 years, while others do it in reverse. It is likely this is due to the complexity of different operations being carried out by residents, since the number of interventions of low complexity can be about 4 times that of complex surgery. While in some services the first year residents never act as a first surgeon, in other they reach up to 100 operations.

Research projects carried out in the last 5 years

Research projects have been carried out within this period at 24/52 (46%) services (average, 1.4 [0-13]), with a subsidy received which ranges between 15 000 and 772 000 € in the cases where this information has been obtained.

Publications in the last 5 years

During this period up to 74% (38/51) of services have published works in international journals (average, 6.2 [0-64]), but it must be noted that 2 services had 28 publications; one, 55, and another, 64. During the period considered 87% (46/53) of the services had published work nationally (average, 13 [0-92]).

Communications at international congresses in the last 5 years

In this period, 63% (32/51) of services have been presented some communication at international congresses (average, 7.5 [0-74]).

Doctoral theses carried out in the last 5 years

In the period indicated, members of the service have read or directed a doctoral thesis in 69% (36/52) of services (average, 2.2 [0-11]).

General score of the services

From these figures, a few critical areas for resident training in otolaryngology have been established. In the first place *a)* auditory evoked potentials; *b)* Videonystagmography/electronystagmography; *c)* exploration of voice; *d)* total number of interventions; *e)* number of tympanoplasties and stapedectomies; *f)* number of ESS; *g)* number of laser surgeries; *h)* number of oncology surgeries; and *i)* number of publications. One point has been allocated to each critical area fulfilled; 2 points when they met the minimum criterion with at least double the activity; 0.5 points for international publications; and 0.5 points for national publications.

The results of this score are reflected in Figure 3. Considering a cut-off figure of 5 points, which precludes the performance of several of these basic requirements, 19 services would be below this point.

Discussion

As mentioned previously, this study has several limitations, mainly relating to the approximate value of some data, due to not being appropriately disclosed in the survey or because the hospital management sent information which was incomplete or difficult to decode (for example, interventions grouped by DRG).

The medical internship residence training system enjoys a deserved reputation, but in our specialty the training that residents receive at some centres is very unbalanced, so that 19 services do not meet basic minimums. This situation was of less importance a few years ago when the number of vacancies in otolaryngology which were covered was well below that of those accredited. This caused that less active services were not selected by potential candidates in most of the opportunities and there were vacancies in several of the 4 accredited openings. However, at this point when, despite contrary indications from the National Commission of Otolaryngology, the Ministry of Health and Consumption has increased the number of accredited vacancies, the situation will change drastically, and the deficit in training of a considerable number of residents will become accentuated. The Ministry of Health and Consumption carries out a work of audits which are formally very thorough, but often fail to consider key aspects of specific training because they do not have sufficient expertise in the specialty being audited. Moreover, each year only 3-4 otolaryngology services are audited, usually in a random manner, unless there is a complaint by residents, and it is exceptional for a poor evaluation to result in a suspension of the teaching license. It is therefore necessary to significantly increase audits, so that at least every 5 years all services passing through one, and that these carry the risk of losing accreditation for those receiving a negative evaluation, the only way

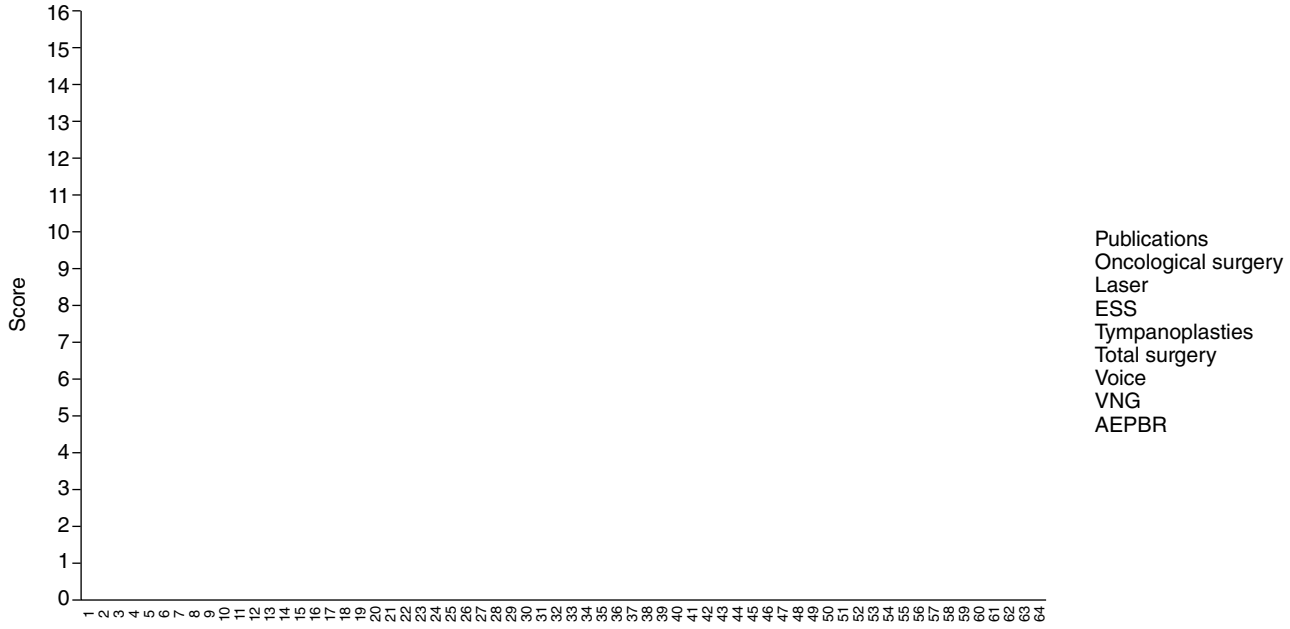

Figure 3 Score of the 64 services evaluated in key areas. AEPBR indicates auditory evoked potentials of the brain stem; ESS, endoscopic sinus surgery; VNG, videonystagmography.

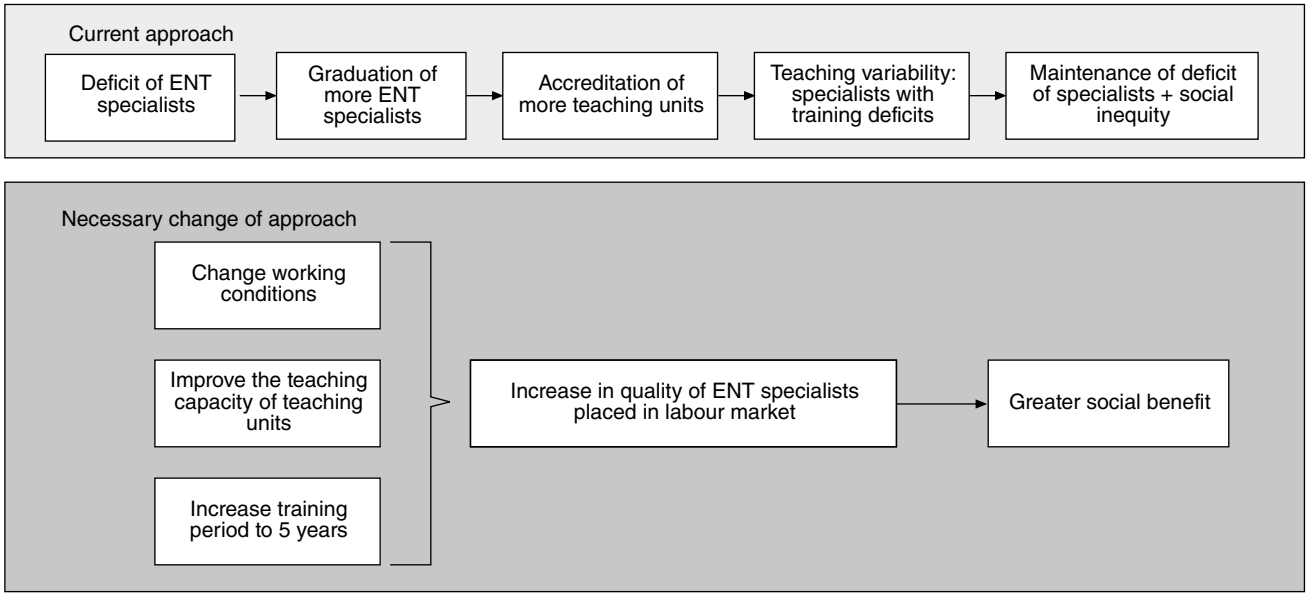

Figure 4 Changing teaching paradigm. ENT indicates ear, neck, and throat (ie, otorhinolaryngology)

to maintain a certain tension that drives improvement in the training process and encourage greater involvement by members of the service. Perhaps the problem is that there is an oversupply of otolaryngology services with a teaching license in our country, given its size. Thus, if you consider that in the United States, with over 300 million inhabitants, there are about 110 departments accredited for training of otolaryngology residents, in Spain, with around 46 million inhabitants, there are 65 services and growing pressure to significantly increase this figure. It thus appears that the

possibilities of the system to provide quality training have been saturated. The corollary is clear: either accreditations are withdrawn from services where training is deficient or these services are integrated into training consortia led by referral services in which to conduct the training of residents in fundamental aspects, to then undertake rotations on specific aspects of general nature at related services (eg, the most common surgeries).[3] Furthermore, the accreditation of new otolaryngology teaching units is not required in order to alleviate the shortage of specialists, taking into account that the current situation is not marked by the shortage of specialists, but by their irregular distribution at a time of creation of several health centres and availability of unattractive places in a rigid employment context (Figure 4).

All of the above is evident when considering the provision of equipment for basic explorations of the specialty. Thus, over 20% of services have no equipment or personnel to perform AEP or VNG/ENG; if we add to this the services which have a clearly insufficient activity in these areas we can say that about 50% of them do not meet the requirements of the training program. The situation becomes even worse in the case of voice exploration, for which only a quarter of the services meets the desirable conditions.

Since this is a surgical specialty, an essential component of otolaryngology is to acquire the skills necessary to, once the training period is completed, perform unsupervised core interventions of the various areas of the specialty. Two conditions must be met for this: that there is a sufficient annual number of interventions in each part of the specialty to meet the demand of residents in training and, that if this is the case, residents act as first surgeon in a significant number of procedures. This last aspect has not been adequately assessed with the questionnaire, as mentioned above, so the only parameter we have is the number of interventions in the service. In relation to that amount, it is difficult to establish the minimum limit to ensure proper surgical training for residents since, as has been mentioned, it is not the only factor to consider. Considering these limitations, we can say that about 30% of services did not perform, in each of the sections analyzed, the appropriate number of interventions to train residents for which they were accredited (1 or 2 per year). Particularly striking is the case of laser surgery for pharyngolaryngeal tumours since, apart from those with a small number of interventions, 15% of services did not have this essential tool available.

Making an inference from the number of internship residents for each service and doctoral theses read in the service in recent years, the big gap indicates that the majority of otolaryngology residents do not have a PhD. In 25% of the otolaryngology services accredited for resident teaching, no doctoral theses have been read in the last 5 years. This data, combined with that of research projects funded by external agencies, may indicate the weight that research has in such services, as communications and publications may be due to specific cases. In this sense, it is hardly encouraging that more than half of accredited services have had no research projects with competitive external funding, even local or regional. An introduction to scientific method and research should be conducted during residency and training specialists without these fundamentals will be burdened for life by this shortcoming, making it difficult to have a critical and scientific view of their professional work. There are parallels between research activity and clinical excellence in healthcare, as has been highlighted by several publications[4]. A certain degree of scientific activity which is measurable by publications in international journals and research projects at the time of granting accreditation to train residents is therefore inexcusable.

Directly related to the above is the publication of papers in journals indexed in Science Citation Index and Journal Citation Reports. There are also wide differences on this aspect between departments with teaching accreditation. Thus, a quarter have not carried out any publications of this kind over the past 5 years, while at the opposite end, 4 services have published 6 or more works per year, thus highlighting the major imbalances existing.

With this assessment, the National Commission of Otolaryngology has tried to set a picture of the current status of training of otolaryngology residents in Spain, with its lights and shadows. The objective is to help accredited departments to improve the conditions in which they train residents, both regarding the organizational schemes which should be changed in the service and with respect to demanding from the medical management the necessary equipment to develop the fundamental aspects of the training program. The regular assessment of care and scientific activity conducted by the teaching units is an essential step towards their progress and towards achieving a more uniform training of residents than what this evaluation has found. Many of the more advanced neighbouring countries carry out periodical reviews on the quality of the training programs of the teaching units, which has been essential in achieving high quality standards. Having an accredited program to train residents should not be interpreted as a sign of status or a help in avoiding the least rewarding aspects of professional practice (shifts, first consultations, etc) and making less effort at work, on the contrary, it is a responsibility and an opportunity. A responsibility which entails a heavier workload due to having to devote time to the training of future specialists (more operating time when they operate under supervision, introduction to scientific activities, etc), which would otherwise not have to be used; an opportunity to convey our improved knowledge to future generations and thereby contribute to the advancement of our specialty.

Conflict of interests

The authors have indicated there is no conflict of interests.

References

1. ORDEN SCO/1262/2007, de 13 de abril, por la que se aprueba y publica el programa formativo de la especialidad de Otorrinolaringología. BOE N.o 110, de 8 de mayo de 2007; p. 19880-9.
2. Comité Científico de la Junta Europea de Otorrinolaringología y Cirugía de Cabeza y Cuello. Programa Europeo de Formación.

Sección de Especialidad dentro de la UEMS. 2005. Available from: http://orluems.com/doc/SPANISHVERSIONLOGBOOK.pdf
3. Suárez C. El programa de la especialidad en España. Boletín electrónico de la SEORL-PCF. 2007. In: http://www.seorl.net/seorl/docs/boletines/BOLETINAGO07.pdf
4. Asenjo MA, Beltrán MJ, Guinovart C, Llach M, Prat A, Trilla A. Análisis de la reputación de los hospitales españoles: relación con su producción científica en cuatro especialidades. Med Clin (Barc). 2006;126:768-70.