URGENT RETINAL DETACHMENT MANAGEMENT BY THE NATIONAL HEALTH SYSTEM OF SPAIN. PROJECT RETINA 2

MANEJO DE LOS DESPRENDIMIENTOS DE RETINA REGMATÓGENOS URGENTES EN EL SISTEMA NACIONAL DE SALUD DE ESPAÑA. PROYECTO RETINA 2

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ABSTRACT

Objective: To identify problems in the urgent management of retinal detachments (RD) in hospitals of the Spanish National Health System (NHS).

Methods: A questionnaire was submitted confidentially to the heads of Ophthalmic Departments of 217 hospitals of the NHS to obtain information on the management of urgent RD during the last year. Data was stored in a Microsoft Access database and statistically analyzed by Excel and Statgraphics. Qualitative variables were analyzed by Chi-Square and Fisher exact tests and quantitative variables by the Kruskall-Wallis test.

Results: A global response rate of 54.8% was achieved with higher participation of the Teaching Hospitals (TH). District Hospital and non-Teaching Hospital responses were similar and grouped as non-TH. Eighteen percent of centers, mostly non-TH, had no ophthalmologist on duty. Thirty-six percent had a vitreoretinal specialist on call. Eighty

RESUMEN

Objetivo: Establecer los problemas en el manejo de los desprendimientos de retina (DR) durante los fines de semana en el Sistema Nacional de Salud (SNS) español.

Métodos: Se envió una encuesta confidencial al jefe de Servicio de 217 hospitales del SNS. Los datos fueron almacenados en una base de datos Microsoft Access y analizados estadísticamente con Excel y Statgraphics. Las variables cualitativas fueron analizadas con el test de Chi-cuadrado y el test exacto de Fisher, y las cuantitativas con el test no paramétrico de Kruskall-Wallis.

Resultados: Se obtuvo una tasa de respuesta del 54,8% con mayor participación de hospitales docentes (HD). Los Comarcales (HC) se incluyeron en el grupo de los No Docentes (HnD) por su patrón de respuestas similares. El 18% de centros no tiene oftalmólogo de guardia. De los que sí disponen, el 36% tiene especialistas de vitreo retina de guardia.

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percent of centres admitted to have problems handling urgent RD during weekends. Twenty-four had no ophthalmic surgical theatre available. Fifty percent refered to have problems having an anaesthesiologist available and only 22% had ophthalmic trained personnel (nurses) available. Sixty-four percent of centres performed pars plana vitrectomy (PPV) and 77% of those were able to perform an urgent PPV. Ninety percent admitted that a patient with a macula-threatening RD occurring at the beginning of the week-end would not be treated until at least 24 hours had elapsed, although 84% considered this to be inadequate.

**Conclusion:** Despite the methodological problems and bias of this questionnaire, we did identify several important problems in the management of urgent RD by NHS hospitals. The data obtained provides useful information to enable the quality of the NHS care of RD to be improved, particularly that available at the week-end (Arch Soc Esp Oftalmol 2007; 82: 279-284).

**Key words:** Retinal detachment, emergencies, weekend-RD, National Health System, Spain.

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**INTRODUCTION**

Retinal detachments (RD) are considered to be serious ocular pathologies, not only by ophthalmologists but also by the bulk of the population, who usually perceives it as a process in need of urgent treatment. During the past century, it was believed to be untreatable (1), and later, after surgery, it led to anatomical reapplications in more than 90 percent of cases, according to some authors (2). The development of techniques allowing for better anatomical results increased concern regarding final visual acuity. One of the factors influencing this functional result is the time lapsed between the appearance of symptoms and its treatment (3). Ideally, those RDs threatening the macula should be repaired within the first 24 hours, and any RD compromising the macula with a 2 to 3 day evolution should be operated on during the following 48 hours (4) after admittance to the hospital.

Another important factor is the reapplication of the retina after the first try, since it is generally associated with a more favorable visual prognosis (5).

Furthermore, the impact in terms of health costs needs to be taken into account when a RD has not been resolved after the first procedure, especially when a proliferative vitreoretinopathy (PVR) develops (6).

This and other reasons explain why in some neighboring countries with a social security system in place have decreed changes in the management of such cases, creating reference units which serve a significant number of patients and endowed with a sound academic organization. This favors an adequate training of retinal surgeons and efficient health coverage for the population (7).

The nation-wide survey undertaken in the framework of the so-called Retina 2 project allowed for gathering information regarding the management of vitreoretinal pathologies in Spain, providing an opportunity to get to know some interesting facts related to the management of emergency retinal detachments.

A previous study revealed the methodological limitations of the said survey and its general findings (8). The purpose of the present study is to describe the results obtained in relation with the management of emergency vitreoretinal pathologies and RDs which take place during the weekends.
SUBJECTS, MATERIAL AND METHODS

Once approval was granted for this project on the part of the Research Commission at our hospital and the Board of Directors of the Sociedad Española de Oftalmología (Spanish Ophthalmology Society), a confidential survey consisting of 30 questions was sent out to 276 ophthalmologic centers across Spain; 217 corresponded to social security hospitals which received the survey on the mail at the beginning of the year 2005.

Nine questions referred to the emergency services, raising two hypothetical clinical scenarios (Table I) of patients arriving in the hospital on a Friday afternoon at 3:30 pm, reporting a primary detachment caused by a tearing located in the XII meridian without an impact on the macula; a series of questions were asked regarding the time for an ideal intervention and the probable date for surgery at the said hospital.

The data analysis was carried out using the Statgraphics software, version Plus 5.1. (Manugistics, Inc, Dallas, USA.) In order to verify the representativeness of the sample, a ratio contrast analysis was used.

After the exploratory analysis of the data, the relations between pairs of variables were studied between relevant variable pairs. The association between quality issues was assessed by analyzing contingency tables, using the Chi-Squared test with the Yates´ correction and Fisher´s statistical exact test.

Concerning quantitative issues, the Kruskal-Wallis non-parametric test was used to compare groups and Pearson´s linear correlation coefficient.

RESULTS

In total, 119 surveys were submitted to hospitals within the National Health System hospitals, which represents a 54.8 percent global response rate. Most answers came from teaching hospitals (TH) which equaled 56.3 percent of the total against non-teaching and county hospitals, classified as nTH.

More than 80 percent of hospitals admitted having problems when providing emergency care to patients suffering from surgical vitreoretinal pathologies. A more detailed analysis revealed that, even though 86 percent of these centers had access to emergency surgery rooms during the weekend, only 76.5 percent could use the ophthalmologic surgery room during that period of time with its specific equipment.

The main issue was to find trained nursing personnel to handle the vitreoretinal equipment. In 82.5 percent of these centers, emergency nurses were available during the weekend, but barely 21.9 percent were trained in ophthalmology. Statistically significant differences were found only between THs and nTHs in terms of use of an emergency surgery room (Chi-Square 7.21; p-value .0072) and emergency personnel (Chi-Square 6.42; p-value .0113), more frequent in THs.

More than 49 percent of all centers reported high or medium difficulties when accessing anesthesia services to treat this type of patients, whereas 30 percent reported having to cancel and/or delaying surgery due to the absence of an anesthetist. No differences were found between THs and nTHs.

Finally, Table II shows the opinion of ophthalmologists who filled out the survey regarding the main obstacles when attending emergency patients. Only 4 percent reported encountering no obstacles and there were no differences between either types of hospital.

The previous study revealed the existence of an average 10.3 of ophthalmologists per hospital staff, 23 percent of which is devoted to retinal pathologies according to the respondents’ statements. Table I. Questions regarding hypothetical clinical scenarios for patients checking into the hospital with primary detachments

<table>
<thead>
<tr>
<th>A patient checks into your service on a Friday at 3.30 pm suffering from an upper bullous RD, U tears at XII hours and attached macula.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When should the patient undergo surgery?</td>
</tr>
<tr>
<td>2. If there are ophthalmologists in your center dedicated to vitreoretinal surgery, when would the patient undergo surgery?</td>
</tr>
<tr>
<td>3. If there are no ophthalmologists in your center dedicated to vitreoretinal surgery, when would the patient undergo surgery?</td>
</tr>
</tbody>
</table>

| A patient checks in with an attached macula, upper bullous RD, 1.0 VA in the affected eye at the ophthalmology unit (not your own) on Friday at 3:30 pm. The patient is admitted into the hospital and undergoes surgery on Monday afternoon, when VA has dropped to .1 due to macular affectation. The retina is reapplied and there are no complications, but VA does not improve beyond .4. |
| Do you believe that the patient has been handled properly? |
3 shows that 18 percent of these hospitals lack an emergency ophthalmologist, a more frequent fact in nTHs (Kruskal Wallis 16.06; p-value .0001.) Furthermore, just 36.1 percent of hospitals are staffed with vitreoretinal ophthalmologists permanently covering the emergency services in this field. Seventy-four (74) percent of these centers do not provide emergency vitreoretinal specialists, and admitted having referred patients suffering from emergency RD to other hospitals.

Sixty-four (64) centers reported performing vitrectomy surgeries (VS), and 77 percent performs emergency vitrectomy surgeries. In both cases, this applied mainly to THs. Almost 70 percent of those hospitals performing VS recorded more than 100 planned surgeries per year. But the number of emergency surgeries dropped to 10 VS for THs and 1.5 in nTHs per year (Kruskal Wallis 6.83; p-value .0090.)

Taking into account the number of specialists dedicated to vitreoretinal pathologies, it can be said that a retinal ophthalmologist at a TH performs around 60 planned VS against 24 at nTHs. And the median of emergency VS per year stands at 2.5 per specialist, with differences arising between THs and nTHs: 3.3 emergency VS per year at THs compared to .6 at nTHs (Kruskal Wallis 6.07; p-value .0137.)

A hypothetical case scenario was described concerning a patient with upper bullous RD and U tear at 12 o’clock without macular affectation checking in the hospital on Friday at 3 pm, with 20/20 visual acuity at the time. Forty-four (44) percent of the surveyed centers (47 hospitals) answered that the patient should undergo surgery ideally within the first 24 hours. The remaining 56 percent (61 centers) stated that the patient should undergo surgery after 24 hours from the time he/she was admitted into the hospital. Nevertheless, both in THs and nTHs, and in those units with and without VR specialists on duty acknowledged that more than 90 percent of patients in these conditions would have to wait more than 24 hours before receiving the appropriate surgical treatment.

Eighty-four percent of respondents considered that delays in treatment with the accompanying drop in visual acuity to 20/80 due to macular compromise were inadequate practices.

### DISCUSSION

One of the limitations of the present study was the selection of the target population. The SNS hospital catalog does not include data regarding the centers endowed with an Ophthalmology Unit nor vitreoretinal ophthalmologists. Thanks to the cooperation of a health-related corporation and prestigious retinal ophthalmologists from all autonomous communities, a list was designed and then compared to the said catalog. The survey was sent out to these centers to the attention of the Section Manager. It is worth noting that the survey was submitted to the Section Manager and not to those physicians in charge of vitreoretinal pathologies for whom the survey had been designed, since no information was available in this sense.

### Table II. Main obstacles for handling emergency retinal detachments

<table>
<thead>
<tr>
<th>Number of centers</th>
<th>%</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>3.49%</td>
<td>4.11%</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>46.51%</td>
<td>54.79%</td>
</tr>
<tr>
<td>Personnel</td>
<td>27.91%</td>
<td>32.88%</td>
</tr>
<tr>
<td>Infrastructure + Personnel</td>
<td>6.98%</td>
<td>8.22%</td>
</tr>
<tr>
<td>Total</td>
<td>84.88%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

### Table III. Staff ophthalmologists on duty

<table>
<thead>
<tr>
<th>Number of centers</th>
<th>%</th>
<th>nTH</th>
<th>TH</th>
<th>Total</th>
<th>%</th>
<th>nTH</th>
<th>TH</th>
<th>Total</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21</td>
<td>5</td>
<td>16</td>
<td>18.10%</td>
<td>4.31%</td>
<td>13.79%</td>
<td>18.26%</td>
<td>4.31%</td>
<td>13.95%</td>
</tr>
<tr>
<td>1</td>
<td>82</td>
<td>51</td>
<td>31</td>
<td>70.69%</td>
<td>43.97%</td>
<td>26.72%</td>
<td>71.30%</td>
<td>43.97%</td>
<td>27.33%</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>11</td>
<td>1</td>
<td>10.34%</td>
<td>9.48%</td>
<td>.86%</td>
<td>.86%</td>
<td>10.43%</td>
<td>9.48%</td>
</tr>
<tr>
<td>Total</td>
<td>115</td>
<td>67</td>
<td>48</td>
<td>99.14%</td>
<td>57.76%</td>
<td>41.37%</td>
<td>100.00%</td>
<td>57.76%</td>
<td>42.24%</td>
</tr>
<tr>
<td>DK/DA</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>.86%</td>
<td>.00%</td>
<td>.86%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>67</td>
<td>49</td>
<td>100.00%</td>
<td>57.76%</td>
<td>42.24%</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Another issue was the final low response rate, around 48 percent. Furthermore, the distribution of responses was not uniform. Since this type of survey, via mail or fax, usually yields low response rates, it may be considered as satisfactory (9.)

On the other hand, it was the only way of carrying out the project. It is worth mentioning that several biases should not be underestimated. One being the «non-response bias» of those centers for which no information is available, since no method was implemented to find those out (10.)

The other, which is partially linked to the later, refers to the overestimation of TH responses.

In any case, future studies on this subject should take into account these biases in order to mitigate their impact and increase the representativeness of the findings.

There are other methodological issues related to the survey. It was not subjected to the so-called “pilot” stage nor did instructions include the definition of all concepts not considered to be standard. Thus, it could happen that not all respondents interpret equally what a “retinal ophthalmologist” is or what “to be on duty” means.

Such limitations have been extensively debated in an article previously published on the Retina 2 Project, suggesting some solutions to settle these issues (8.) Despite these and other limitations, this survey is the first attempt to obtain data at the national level on the handling of emergency surgical vitreoretinal pathologies and provided some data which appear to be very interesting.

Thus, taking into account such limitations, it is worth mentioning that more than 80 percent of the SNS centers which participated in the survey reported problems when dealing with patients suffering from emergency surgical vitreoretinal pathologies during the weekend, most centers attributing such difficulties to infrastructure issues and, to a lesser extent, to personnel issues.

Among these issues, it is worth mentioning that only 22 percent of the centers are equipped with nursing personnel trained to handle the complex vitreoretinal material. Additionally, almost 50 percent reported issues when requesting the much needed coverage on the part of the Anesthetics Unit. And above all, it is worth noting that barely 36 percent of the centers are staffed with a retinal ophthalmologist on duty. Even in those centers, a patient checking in on a Friday afternoon reporting a retinal detachment would not undergo surgery in the first 24 hours, according to the recorded responses.

It is surprising to see that, although there seems to be a resource distribution which favors THs, whether in terms of VR specialized physicians or access to personnel trained in ophthalmology during the weekends, this does not translate, for instance, into significant differences in terms of the number of emergency surgeries performed at these hospitals.

The American Academy of Ophthalmology not only emphasizes the fact that when the macula is not affected, it should be repaired preferably within the first 24 hours, but also if there is a threat of macular affectionation, it recommends reducing this deadline to a few hours (4.) Ho et al found only one significant association with the evolution of a macular affectionation in terms of distance of the subretinal fluid (SRF) from the fovea (11.) Nevertheless, 61 percent of patients analyzed underwent surgery on the very same day when the symptoms began.

Of the remaining 39 percent, who received treatment beyond the first 24 hours, more than one third evolved to macular affectionation. Finally, 84 percent of Spanish respondents acknowledged that such delays could affect the patient’s vision and is an inadequate practice, which reveals that the delays in surgery observed in most hospitals participating in the survey does not result from bad medical practice.

One could therefore deduct that infrastructure and/or organization issues hinder emergency surgeries. It is obvious that there is a lack of resource coordination or else a deficient management of resources, since although in 36 percent of centers there is a VR specialist on duty, 78 percent of the centers performing VPP has no access to personnel capable of performing surgery.

A similar situation could be observed in the United Kingdom six years ago (7.) Even though many hospitals, especially teaching hospitals, had access both to specialized ophthalmologic surgery rooms and to nursing personnel specifically trained, in reality delays were attributed partly to the fact that only 28 percent of vitreoretinal surgeons were on duty and a good number of retinal fellow physicians in teaching hospitals were not formally located. The survey results helped in introducing changes in the British National Health System aimed at guaranteeing a more adequate surgical treatment to patients suffering from retinal detachments.
Another interesting fact is the scarce number of emergency vitrectomies performed, barely 10 per year at THs and 1.5 at nTHs.

It seems unnecessary to discuss that the low number of emergency operations does not justify providing hospitals with the necessary resources to perform this emergency surgery and that these data are arguments in favor of concentrating this type of emergency services in certain hospitals, such as the case in the United Kingdom.

Despite the data obtained through this study should be analyzed with caution due to the way in which the sample was selected and since the non-response bias was not taken into account, some of the main deficiencies present in the Spanish SNS could be identified in terms of emergency retinal detachment management and the available resources. These data may be of great interest for medical officials if they wish to set up an appropriate coverage and a more efficient model to deal with retinal emergencies in the future.

REFERENCES