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Editorial

Meta-analysis of survival in surgery

Since its introduction in 1976 by Glass, the term meta-analysis (MA) has taken on greater importance in scientific literature, to the point that with respect to evidence-based medicine, it now occupies an important place in terms of the quality and certainty of the knowledge it transmits. Although not exempt from methodological problems, it is a resource that is used more and more often, perhaps because it is the best synthesis tool known to date. However, as occurs with clinical trials, in the field of general surgery publications it is still much less frequently used than in other branches of biomedicine, although the emergence of laparoscopic surgery has modified this trend to a large extent.

Even so, it is still true that this type of publication is virtually always present in the most important surgical journals, leaving other publications, such as *Cirugía Española* with practically no options. It is possible that the authors undertaking the complex task of drawing up an MA wish to see their efforts rewarded in the form of impact or the rapid diffusion of what they have contributed. However, it is to be expected that these MA will soon be published much more frequently in all journals and in all languages, as the scientific level of each country progresses. Greater access to knowledge and the necessary software tools will with no doubt facilitate this evolution.

At present, there is an enormous abundance of new techniques in our field that require their results to be accredited in a certified form. Many are related to laparoscopic surgery, particularly those concerning the treatment of malignant tumours. The recent controversies regarding colon cancer, which have largely been resolved,[1] have now been transferred to rectal cancer and gastric cancer,[2] and possibly will continue afterwards in the case of other tumours. The role of MA may be fundamental in this respect, since, as it is an excellent synthesis tool, it may accelerate the resolving of the uncertainties that are initially posed by laparoscopy. If surgeons could convince us that it is possible to design an MA for not only clinical trials, but also for non-randomised studies,[3] which are very frequent in our field, this would most certainly be the dawning of a new era. There is no question that an MA performed on randomised studies will give rise to more problems than those performed on exclusively clinical trials, but these problems are not impossible to eliminate, and will at least enable us to identify, understand and measure the source of heterogeneity affecting most studies that have been published by us.[4]

Survival is possibly the most important variable when comparing laparoscopy and open surgery, or any other type of therapeutic technique in diseases that are potentially lethal. Without forgetting surgical times, complications, hospitalisation, ganglions obtained during the lymphadenectomies, loss of blood, etc, that are not always secondary variables in many studies published. However, a survival MA is not what we could call a conventional or classical MA, since creating it involves an added difficulty. Even though the most complex aspect of any MA is the screening and selection of the articles whose results are to be synthesised, rather than the statistical analysis itself, in the case of survival, we find considerable differences in the way in which the selected articles present their results, and these differences often cause us to lose sight of the original objective pursued, as it makes it impossible to gather the data correctly[5] and, consequently, makes it necessary in turn to use certain types of MA that are more conventional, such as the odds ratio,[1] which are not all that accurate when it comes to dealing with times and the censured observations that are typical of survival studies, which are not taken into consideration. There can be no doubt about this since it is a personal experience.

Since the CONSORT guidelines for publishing clinical trials were created, mainly, to facilitate the evaluation of those trials, and also data-collection for the purpose of creating a subsequent MA, something similar and with the same purpose could also be done for observational survival studies. The fact that some journals now require a table with the number of patients at risk to be included below a Kaplan-Meier curve, at the start of each follow-up period, has much to do with the issue we are dealing with here.

The most curious aspect is that it is not difficult at all to homogenise the method of reporting survival results so that they can subsequently be used for a hypothetical MA. Apart from what we have referred to regarding figures containing survival curves, there are a few recommendations which journal publishers must request, not only because of the survival MA question, but also to achieve greater quality in the publication itself. Specifically, there are 3 which are fundamental.

Firstly, if the log-rank test is used to report the survival figures for 2 groups of patients, which is often the case in survival studies, it is not that difficult to add the hazard ratios

and their confidence intervals. In doing this the problem of the MA would be solved, since the necessary data for a reliable and easily accessible survival MA could be recalculated, as in the case of the one that uses the logarithms of those hazard ratios.[5] If we use the Cox regression method, we must not forget to include the coefficients of the variables (and their standard errors), which are given by all the statistical programmes, and which are simply the natural logarithms of the hazard ratios. Although this is not the case of the Cox regression method, it is quite surprising to find that one of the reasons by which the hazard ratio is not reported when using the log-rank test is the wide use of statistical programmes that do not include this information, such as the well-known SPSS. One way of remedying this, if no other option is available, is to use this regression in the non-variable mode, that is, by entering only the variable of the groups being compared. If it is permitted to use the log-rank test, this resource should also be permitted.

Secondly, a table with the events taking place within a specific period, and the patients at risk with whom the next period is started constitutes information that may be essential for an MA, in addition to evaluating the survival results themselves. If this table is not placed below the survival graph, as already mentioned above, a space could be left for it in the manuscript, at least for the fundamental period marking the follow-up, for example, after 1 year, 3 years, 5 years, etc.

Thirdly, in the absence of the foregoing, or as an important piece of additional information to the above, the number of events counted in each group on terminating the follow-up, the number of patients initially forming part of each group to be compared, the minimum follow-up time and the maximum follow-up time are 4 pieces of information that could be used to draw up a classical MA of the odds ratio, such as that of any qualitative variable, but adapted and duly adjusted to survival data containing censured observations.[5,6] This is perhaps the easiest and most accessible solution for any future author. In addition to this, a study on survival that does not contain this basic information will most certainly be of poor quality.

Unfortunately, a survival MA is a type of publication that is lacking in many surgical journals. Let's, then, make the data-gathering task much easier for all those authors who are courageous enough to undertake it.

REFERENCES

1. Reza MM, Blasco JA, Andradas E, Cantero R, Mayol J. Systematic review of laparoscopic versus open surgery for colorectal cancer. Br J Surg. 2006;93:921–8.
2. Hosono S, Arimoto Y, Ohtani H, Kenamiya Y. Meta-analysis of short-term outcomes after laparoscopy-assisted distral gastrectomy. World J Gastroenterol. 2006;12:7676–83.
3. Stroup DF, Berlin JA, Morton SC, Olkin I, Williamson GD, Rennie D, et al. Meta-analysis of observational studies in epidemiology. A proposal for reporting. JAMA. 2000;283: 2008–12.
4. Naylor CD. Meta-analysis and the meta-epidemiology of clinical research. BMJ. 1997;315:617–9.
5. Parmar M, Torri V, Stewart L. Extracting summary statistics to perform meta-analysis of the published literature for survival endpoints. Statist Med. 1998;17:2815–34.
6. Vale CL, Tierney JF, Stewart L. Effects of adjusting for censoring on meta-analysis of time-to-event outcomes. Int J Epidemiol. 2002;31:107–11.

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