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Review Article

Level of evidence of knee surgery in national journal☆,☆☆

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ABSTRACT

Select the studies related to knee surgery in the orthopedic literature published by Acta Ortopédica Brasileira (AOB) and the Revista Brasileira de Ortopedia (RBO) and classify them according to the levels of evidence. We selected all studies published from 2000 to 2011 related to knee surgery in AOB and RBO. The following categorization was adopted: level 1: systematic review; level 2: clinical trial; level 3: cohort studies and case–control; level 4: number of cases; level 5: narrative review and others. We found in the national literature selected 255 studies related to knee surgery. In the Southeast were developed 212 articles (83.1%), 30 publications in the South (11.7%), Northeast 5 (2%), North and Central West 2 jobs each (0.8%). Four work performed in other country (1.6%). The most common issue was the anterior cruciate ligament in 58 studies (22.7%) and arthroplasty in 55 studies (21.5%). Most studies presented evidence level IV (27.8%) and V (50.2%). The national scientific production related to knee surgery presents itself expanding with predominant expression in the Southeast. Most studies related to knee surgery published in national journals have low level evidence and focuses on the approach of the anterior cruciate ligament and arthroplasty.

Níveis de evidência da cirurgia de joelho em periódicos nacionais

Palavras-chave:
Medicina baseada em evidências
Joelho
Indicadores bibliométricos

RESUMO

Selecionar os estudos relacionados à cirurgia do joelho publicados na literatura ortopédica nacional por meio da Acta Ortopédica Brasileira (AOB) e da Revista Brasileira de Ortopedia (RBO) e classificá-los de acordo com os níveis de evidência. Foram selecionados todos os estudos publicados de 2000 a 2011. A seguinte categorização foi adotada: nível 1 - revisão sistemática; nível 2 - ensaio clínico; nível 3 - estudos de coorte e caso-controle; nível 4 - série de casos; nível 5 - revisão narrativa e outros. Foram encontrados 255. Na região Sudeste foram 212 artigos (83,1%), na Sul 30 (11,7%), na Nordeste cinco (2%), na Norte e na Centro-Oeste dois cada (0,8%). Quatro trabalhos foram desenvolvidos no exterior (1,6%). O tema mais

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☆☆ Study conducted at Knee Group, Department of Orthopaedia and Traumatology, Escola Paulista de Medicina, Universidade Federal de São Paulo, São Paulo, SP, Brazil.

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comum foi ligamento cruzado anterior, em 58 estudos (22,7%), e artroplastias, em 55 estudos (21,5%). A maior parte dos estudos apresentou nível de evidência IV (27,8%) e V (50,2%). A produção científica nacional relacionada à cirurgia do joelho apresenta-se em expansão, com predomínio de expressão na região Sudeste. A maioria dos estudos tem baixo nível de evidência e concentra-se na abordagem do ligamento cruzado anterior e das artroplastias.

Introduction

The concept of evidence-based medicine (EBM) was introduced in 2001 and since then has raised the interest of the scientific community.[1] These concepts began to appear in major conferences and symposia from 2003.[2,3]

Unlike traditional medicine, this new branch is not grounded in intuition, in unsystematic clinical experience nor in pathophysiological rationale as sufficient reasons for the process of clinical decision-making. Evidence-based medicine requires new skills of the physician, including knowledge of research in the literature, their tools and the evaluation of clinical evidence. There was an increase in the production of articles that instruct the physician on how to access, evaluate and interpret medical literature.[3,4] This critical sense becomes mandatory, considering the large number of publications and frequent methodological pitfalls which may lead the reader to misleading and potentially dangerous conclusions for his or her clinical and surgical practice.[5,6]

The orthopedic literature followed the line of international publications in the search of better levels of evidence in the publications, and the methodological quality of the articles began to be analyzed under more rigorous criteria.[4] However, to date, the national literature lacks critical studies of levels of evidence in orthopedics and traumatology.

In the present study, we carried out a review with the aim of selecting articles related to knee surgery and published from 2000 to 2011 in the national orthopedic literature by Acta Ortopédica Brasileira (AOB) and Revista Brasileira de Ortopedia (RBO), and classify them according to levels of evidence. These two journals were chosen because of their insertion into the national scenario and also for being indexed, via SciELO, as an international bibliographic database.

Secondary variables to be observed: the number of studies published per year, the region in which they were developed, and the main issue addressed in the study.

Materials and methods

For evaluation, this review has taken into consideration studies published in the national orthopedic literature: Acta Ortopédica Brasileira (AOB) and Revista Brasileira de Ortopedia (RBO). All published studies from 2000 to 2011 related to knee surgery were selected.

The inclusion criteria were: knee surgery-related studies, selected manually in the published editions containing in the title: knee, distal femoral and proximal tibial fracture, knee arthroscopy, meniscus, anterior cruciate ligament, posterior cruciate ligament, patella, posterolateral complex or corner, knee arthroplasty, and knee biomechanics. Exclusion criteria were articles with topics not related to knee surgery. This study was approved by the research ethics committee (number: 120,790).

The identification of the studies was electronically done, edition by edition, by identifying those items which fit in the inclusion criteria. A new selection was made based on the summary and on the full text. Doubts in the selection of articles were resolved by consensus between two researchers, David Rosario Veiga and Guilherme Araújo Conforto Gracitelli (DAVR and GCG). Having persistence of doubt, a third reviewer was consulted: Carlos Eduardo da Silveira Franciozi (CESF). After the identification of the studies, two reviewers (DAVR and GCG) independently collected the qualitative characteristics of the studies: journal (AOB and RBO), year of publication (before 2005 and before 2011) and region of the country where they were conducted.

After selection, the items were categorized by two raters according to level of evidence and type of study. The categorization was made after the reading of the entire article. The following categorization was adopted: level 1 – systematic review, level 2 – clinical trial; level 3 – cohort and case–control studies, level 4 – number of cases; level 5 – narrative review and others (example: a biomechanical, anatomical, of accuracy, or of basic science study). The possible doubts on the categorization of articles were resolved by consensus between two of the researchers (DAVR and GCG). Having persistence of doubt, a third reviewer was consulted (CESF).

The descriptions of the articles were made with the use of absolute and relative frequencies for presentation of data by year of publication, region of the country, main theme of the article, and type of study. The results are illustrated graphically for presentation. The descriptive statistical analysis was done using the Excel 2007 program.

Results

The evidence-based medicine requires concern, by part of researchers, regarding the quality of the studies. From 2000 to 2011 255 studies related to knee surgery were found in the national literature evaluated.

Over the years, we observed an increasing number of publications in national journals (Fig. 1). In 2000, only 11 papers related to knee surgery in the national literature were presented to the scientific community; this number reached 26 in 2005 and 50 in 2011.

In the analysis of the region of generation of these articles (Fig. 2), the Southeast region takes clear advantage, with 212 (83.1%). The South region had 30 (11.7%), the Northeast region five (2%) and the North and Midwest regions two articles

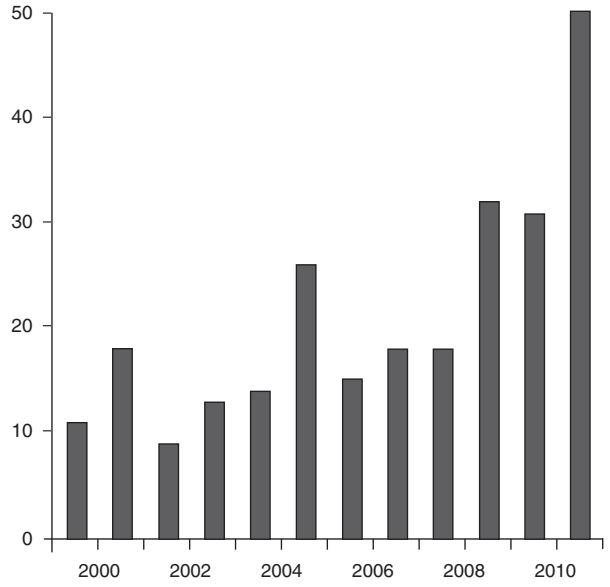

Fig. 1 – Sum of publications on knee in AOB and RBO journals.

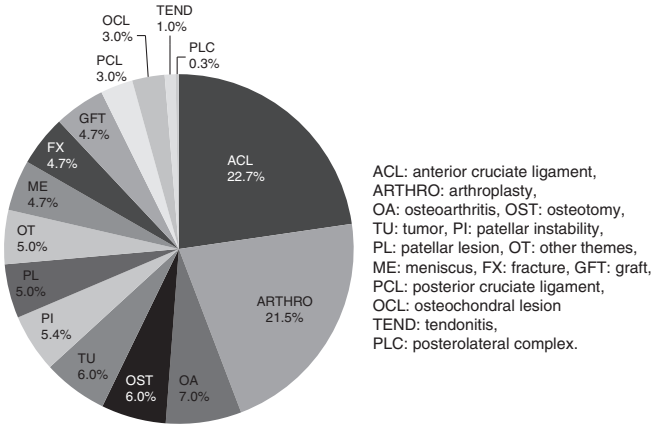

Fig. 3 – Main theme addressed in the study. ACL: anterior cruciate ligament, ARTHRO: arthroplasty, OA: osteoarthritis, OST: osteotomy, TU: tumor, PI: patellar instability, PL: patellar lesion, OT: other themes, ME: meniscus, FX: fracture, GFT: graft, PCL: posterior cruciate ligament, OCL: osteochondral lesion, TEND: tendonitis, PLC: posterolateral complex.

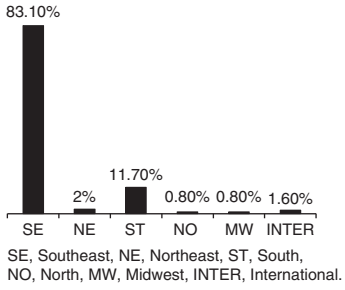

Fig. 2 – Scientific production by region. SE, Southeast; NE, Northeast; ST, South; NO, North; MW, Midwest; INTER, International.

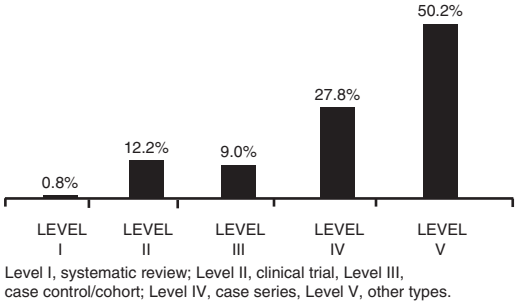

Fig. 4 – Level of evidence from studies. Level I, systematic review; level II, clinical trial, level III, case control/cohort; level IV, case series, level V, other types.

each (0.8%). Four projects developed abroad were published in national journals (1.6%).

Regarding the main topic approached, it became clear the interest in publications on the topics "anterior cruciate ligament", with 58 studies (22.7%), and "arthroplasty", with 55 studies (21.5%). Other issues have the distribution shown in Fig. 3.

Fig. 4 illustrates the level of evidence of the selected studies. Most of the studies presented evidence level IV (27.8%) and V (50.2%). Fig. 5 shows the subdivision of level V studies.

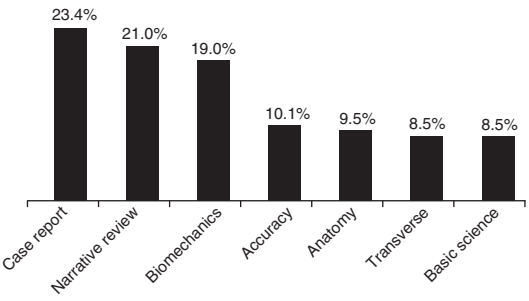

Fig. 5 – Stratification of evidence level V.

Discussion

The analysis of the national literature, in search of papers published on the subject "knee surgery", demonstrated a similar trend to the international literature, with increasing scientific production over the years.[6,7] In 2000, 11 papers were published, increasing to 26 in 2005 and to 50 in 2011. This stimulus to scientific production can be explained by an increasing demand for evidence to justify the application of a therapeutic method. In the past, an expert opinion was sufficient for the adoption of a treatment protocol.

Our study found that the majority of published studies pertain to the evidence levels IV and V. These data are similar to those found in the international literature and in the national literature on other orthopedic issues.[4,8] Some hypotheses may explain the large number of studies of levels IV and V: usually,

they are of low cost and depend on little planning/prior knowledge. These studies can be part of the routine of the health care team, and generally do not require long follow-ups, and can be conducted in a short time.[1,8]

It should be borne in mind that open observational studies are also important, especially in the early stages of testing a new intervention; these studies can provide valuable information for patient care. However, in this case, it is crucial that elaborate techniques for data analysis be used, with construction of multivariate regression models to control for potential confounding factors.[5,7] It is recommended that the authors make every effort and use a control group in their studies, since this practice can substantially raise the rating of the level of evidence and improve the confidence with which one can apply the information obtained to clinical and surgical practice.[6]

A secondary endpoint showed great difference in relation to the scientific production in the various regions of our country. This difference has already been mentioned in other papers of the national literature, that always viewed the Southeast region (83.1%) as the national scientific production center, followed by the South (11.7%).[8] This finding should be viewed as an incentive to the other regions, to increase their scientific production and follow the trend of the national and international literature.

Another secondary variable indicates the preference of the conduction of scientific work on anterior cruciate ligament (22.7%) and knee arthroplasties (21.5%) themes. The enormous scientific literature that addresses these issues may explain the improvement of techniques, in therapeutic options, and in the prevalence of increasingly satisfactory postoperative results over the years.

The limitations of this study is the possibility of publication of works related to knee surgery in other national journals that were not investigated, and the possibility of publication of studies developed in Brazil in international journals with higher level of evidence.

Conclusion

The national scientific production related to knee surgery has been growing, with predominant expression in the Southeast region.

Most of the studies related to knee surgery published in national journals have low level of evidence and concentrate on the approach to the anterior cruciate ligament and arthroplasty.

Conflicts of interest

The authors declare no conflicts of interest.

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