Special Communication

Quality of Interventional Radiology Literature: A Review of Articles Published in JVIR and CVIR

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PURPOSE: To evaluate the quality of reporting of clinical studies published in two interventional radiology journals.

MATERIALS AND METHODS: Two investigators reviewed all articles reporting the outcomes from therapies in 12 consecutive months of *Journal of Vascular and Interventional Radiology* (JVIR) (August 2007 to July 2008) and *CardioVascular and Interventional Radiology* (CVIR) (July/August 2007 to May/June 2008). The included studies were evaluated by means of a score sheet adapted from the Consolidated Standards of Reporting Trials criteria. The score sheet was comprised of 22 categories, with each given a score of 0–2. These scores were summed (maximum score, 44) and the comparative results analyzed by using the Wilcoxon rank sum and χ^2 tests.

RESULTS: A total of 129 articles were reviewed from JVIR and 86 from CVIR. JVIR's mean score was 23.3 ± 4.9, which was significantly higher than CVIR's mean score of 19.8 ± 5.7 ($P < .0001$). Prospective studies comprised 38% (49 of 129) of JVIR's articles and 35% (31 of 86) of CVIR's studies ($P = .9076$). The mean sample sizes were larger for JVIR than for CVIR (130.8 and 66.3, respectively) ($P = .0173$). Both journals primarily published case series (112/129 [86.8%] for JVIR and 76/86 [88%] for CVIR). Only six of the129 articles (4.6%) in JVIR and seven of the 87 (8.1%) in CVIR were randomized studies. Key weaknesses in reporting include lack of randomization, blinding of outcome assessment, sample size analysis, and proper reporting of outcomes.

CONCLUSIONS: Articles published in both journals displayed substantial weaknesses that potentially limit the validity of their conclusions.

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Abbreviations: CONSORT = Consolidated Standards of Reporting Trials, CVIR = *CardioVascular and Interventional Radiology*, JVIR = *Journal of Vascular and Interventional Radiology*

DURING the past 2 decades there has been rapid development of the interventional radiology literature. The size and scope of the field's two primary journals, the *Journal of Vascular and Interventional Radiology* (JVIR) and *Cardiovascular and Interventional Radiology* (CVIR), have grown. To date, there has been little study of the quality of the current published reports in those journals. We identified only one article published in that interval evaluating the quality of the interventional radiology literature. Huang and co-workers (2) reviewed the interventional radiology studies published in a 1-year period from 2000 to 2001 in JVIR and *Radiology* (2). Those authors reviewed a total of 130 articles and classified them according to research topic, study design, and other attributes. The authors' intent was to identify key statistical design and analysis characteristics of published studies to educate readers as to the research concepts essential for them to understand to allow a proper assessment of the literature. The authors did not assess the quality of the study design or the completeness of reporting of the results.

There have been qualitative reviews of the literature of other specialties (3–10). One measure commonly used to assess the methodologic quality of published studies of comparative intervention trials is adherence to the Consolidated Standards of Reporting Trials (CONSORT) initiative (1). These standards, listed in the **Table**, are in broad use and required for inclusion in submissions to such major journals as the *Journal of the American Medical Association* (11) and the *New England Journal of Medicine* (12). Such standards are a tool used to determine if studies are of sufficient quality to be included in systematic reviews, such as those published by the Cochrane Collaboration (13).

Because evidence included in systematic reviews is derived from original scientific publications, we were curious as to whether the quality of the published studies in the current interventional radiology literature is sufficient to be useful in an evidence-based system-

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CONSORT Criteria

Section	Item	Description
Title and abstract	1	How participants were randomly assigned.
Introduction	2	Scientific background and rationale.
Methods		
Participants	3	Eligibility criteria and locations of data collection.
Interventions	4	Precise details of interventions for each group, and how and where they were administered.
Objectives	5	Specific objectives and hypotheses.
Outcomes	6	Clearly defined primary and secondary outcome measures and, when applicable, any methods used to enhance the quality of measurements.
Sample size	7	How sample size was determined and, when applicable, explanation of interim analyses and stopping rules.
Random sequence generation	8	Method used to generate the random allocation sequence, including restriction details.
Random allocation concealment	9	Method used to implement the random allocation sequence, clarifying whether the sequence was concealed until interventions were assigned
Random implementation	10	Who generated the allocation sequence, who enrolled participants, and who assigned participants to their groups.
Blinding	11	Whether or not participants, those administering the interventions, and those assessing the outcomes were blinded to group assignment. If done, how the success of blinding was evaluated.
Statistical methods	12	Statistical methods used to compare groups for primary outcomes; methods for additional analyses, such as subgroup analyses and adjusted analyses.
Results		
Participant flow	13	Flow of participants through each stage (diagram); reporting participant randomization, intention-to-treat, and primary outcome analyses. Also, describe study protocol deviations with explanation.
Recruitment	14	Dates defining periods of recruitment and follow-up.
Baseline data	15	Baseline demographic and clinical characteristics of each group.
Numbers analyzed	16	Number of participants (denominator) in each group included in each analysis and whether the analysis was by "intention-to-treat." State the results in absolute numbers when feasible (eg, 10/20, not 50%).
Outcomes and estimation	17	For each primary and secondary outcome, a summary of results for each group, and the estimated effect size and its precision (95% confidence interval).
Ancillary analyses	18	Address multiplicity by reporting any other analysis performed including subgroup analyses and adjusted analyses, indicating those prespecified and those exploratory.
Adverse events	19	All important adverse events or side effects in each intervention group.
Comment		
Interpretation	20	Interpretation of the results, taking into account study hypotheses, sources of potential bias or imprecision, and the dangers associated with multiplicity of analyses and outcomes.
Generalizability	21	Generalizability (external validity) of the trial findings
Overall evidence	22	General interpretation of the results in the context of current evidence.

Source—Adapted from reference 1.

atic review. We therefore undertook this investigation of the current interventional literature to assess the quality of the published studies in this field by using adherence to CONSORT statement criteria as the standard. We did this recognizing that CONSORT criteria are intended to assess the report quality of randomized trials and that many of the studies in our literature are not randomized. However, the CONSORT criteria represent the ideal for the evaluation of intervention trials and thus are most applicable in this setting.

MATERIALS AND METHODS

Two investigators evaluated the clinical studies from two leading interventional radiology journals, JVIR and CVIR. Because JVIR is published on a monthly basis, 12 consecutive issues from August 2007 through July 2008 were reviewed. Six successive issues of the bimonthly published CVIR—from July/August 2007 to May/June 2008—were included. Each investigator (J.M., J.B.S.) independently reviewed the articles in six issues of JVIR and three issues of CVIR.

The CONSORT standards are intended to be applied to the reporting of randomized clinical trials, and, as such, only articles published in the "Clinical Studies" or "Clinical Investigations" sections of JVIR and CVIR, respectively,