Underrecognition of Pathologist Contributions to Articles Published in a Major Multidisciplinary Medical Journal

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Key Words: Authorship criteria; Uniform requirements for manuscripts (URM); Multidisciplinary medical journal; Intellectual content; Pathologist; Radiologist

DOI: 10.1309/AJCPXSKDA3AOGHLLI

Abstract

The Canadian Medical Association Journal (CMAJ) is a high-impact multidisciplinary medical journal. We have observed instances in which a pathology diagnosis, documented with gross or microscopic images, forms an integral part of a CMAJ article, but a pathologist is neither an author nor acknowledged as a contributor. To examine the hypothesis that pathologist contributions are underrecognized and/or underdocumented, we reviewed all CMAJ articles over a 6-year period (September 2003-2009), and correlated the use of pathology images with pathologist authorship or contribution. For each article containing pathology images, department affiliations of authors were determined, and acknowledgments were assessed. Although only 1.7% of articles contained pathology images, 47% (26/55) of these articles did not include a pathologist as either an author or a contributor. We conclude that important intellectual contributions of pathologists are underrecognized and suggest that the scientific credibility of pathology data is in doubt when pathologists do not take on full responsibility of authorship or are not acknowledged as contributors.

Established in 1911, the Canadian Medical Association Journal (CMAJ) is a well-respected, high-impact (impact factor 9.02 in 2010) multidisciplinary health sciences journal. The CMAJ is a founding member of the International Committee of Medical Journal Editors (ICMJE) and endorses the uniform requirements for manuscripts (URM) submitted to biomedical journals.1 These guidelines attempt to standardize the ethics, preparation, and formatting of manuscripts submitted for publication in biomedical journals. Compliance with the URM is required by most leading biomedical journals, including the CMAJ.2,3

The number of byline authors has increased exponentially in biomedical journals since the 1950s.4 The ICMJE, in an effort to define the quantity and quality of contribution that qualify for authorship, recommends the following criteria: (1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content; and (3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3. Importantly, “each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.” Some ICMJE journals now require that “one or more authors, referred to as ‘guarantors,’ be identified as the persons who take responsibility for the integrity of the work as a whole, from inception to published article, and publish that information.”1,3,5 Contributors who do not meet the criteria for authorship should be listed separately in an acknowledgments section outlining their contributions.

Over the past decade, we have observed CMAJ articles in which a pathology diagnosis, including published gross and/or microscopic photographs with detailed figure legends,
forms an integral part of the manuscript, but a pathologist is not included as an author or a contributor. In these instances, it is unclear who guarantees the integrity of the pathology information, interpretation, and diagnosis. To examine the hypothesis that pathologist contributions to CMAJ articles are underrecognized and/or underdocumented, we reviewed all CMAJ articles over a 6-year period, and correlated the use of pathology images with pathologist authorship or acknowledgment of contribution.

Materials and Methods

All CMAJ issues over a 6-year period (September 2003-September 2009) were reviewed. For each article containing gross pathology images and/or photomicrographs (including electron microscopy, cytology, and histology images), department affiliation of authors was determined using the author byline, and acknowledgments were assessed. In rare instances in which the subspecialty could not easily be inferred, additional exploration via the Internet was performed to identify the clinical backgrounds of the author(s). Authors were not contacted directly to determine specialty affiliation. As a direct comparison, an identical survey approach was performed, over the same time period, for articles containing radiology images, including x-ray films, computed tomography (CT) scans, magnetic resonance imaging scans, and ultrasound studies.

Results

During the study period, approximately 3,170 articles were published in 150 CMAJ issues. Fifty-five articles included pathology images, but only 21 (38%) of these articles included a pathologist in the author byline. Another 8 articles (15%) acknowledged the contribution of a pathologist. A pathologist was neither included as an author nor acknowledged as a contributor in 47% of 55 articles. In comparison, in 181 articles that contained radiology images, no radiologist authorship or acknowledgment was listed in 130 (72%).

Discussion

Articles published in the CMAJ are intended for a multidisciplinary medical audience and many are collaborative efforts with involvement of several medical disciplines. Our study reveals that authorship and contributions of 2 diagnostic specialties, pathology and radiology, are often not documented in articles published in this journal.

Photomicrographs of pathology material can only be acquired and interpreted by a qualified pathologist or pathology resident trainee. When a pathology diagnosis forms the basis for, or a major component of, a scientific publication, then, in our opinion, the pathologist has made a critical contribution to “acquisition of data, or analysis and interpretation of data” and should easily fulfill the other URM criteria for authorship. Omission of the pathologist as author or contributor in 47% of CMAJ articles containing pathology images implies an underappreciation of the pathologist’s role and expertise, and/or a lack of understanding of the URM authorship criteria. In most instances, it seems likely that the pathologist’s contributions were simply undervalued by the clinician authors. However, it is also possible that pathologists themselves contributed to this problem by not assuming the responsibilities of authorship and not recognizing the critical importance of their diagnostic expertise, pathology images, and interpretative text/legends to the published article.

If a pathologist is neither a coauthor nor acknowledged as a contributor, it is unclear who takes responsibility for the original pathologic findings (ie, images, description of findings, interpretation, diagnosis, etc) published in multidisciplinary journals or clinical specialty journals. Failure to include any pathologists as coauthors in articles presenting original visual pathology data has, on occasion, had disastrous consequences for the credibility of coauthors, journals, and journal editors. One prominent example was the internationally heralded “discovery” of the cause of toxemia of pregnancy, an intravascular helminth *Hydatodes luidha*, photomicrographs of which were published with great fanfare in the prestigious *American Journal of Obstetrics and Gynecology* without any laboratory physicians as coauthors. Pathologists and parasitologists immediately recognized the “organisms” to be intravascular fibrin strands and other artifacts. Based on the incidence of authorship, our data suggest that, in the context of multidisciplinary articles presenting original pathologic data, pathologists recognize the importance of clinician input to verify clinical data at a significantly higher frequency (95%
included as authors) than nonlaboratory physicians recognize the requirement for pathologist input to verify pathologic data (only 39% included as authors) ($P < .0001$, Fisher exact test).

Unlike pathology photomicrographs, radiology images are easily accessible to clinicians via digital picture archiving and communication systems, and a radiologist need not be involved in retrieval of these images for publication or in many cases, even in their accurate interpretation. This is because many nonradiologist clinicians are capable of describing findings in uncomplicated x-ray or CT images. This may explain the remarkably low rate (28%) of radiologist authorship or acknowledgment in CMAJ articles incorporating radiology images. However, we contend that such noninclusion of a radiologist’s expertise undervalues the important intellectual contribution of a diagnostic discipline to scientific endeavor and biomedical publication.

Numerous studies have examined the complexities of biomedical authorship, including issues such as guest, honorary, and ghost authorship, and falsification of author order on the byline.4 A single, universally adopted set of authorship guidelines does not yet exist, despite the initiatives of the ICMJE and other organizations, and there are marked differences in how the guidelines are interpreted.4,10 Self-assessment studies reveal that many authors fail to meet ICMJE criteria for authorship.10-13 In today’s multicolaborative research environment, the allocation of responsibility and credit has become increasingly complex, and the ICMJE criteria may be too limiting and simplistic.13 Many journals have now adopted the concept of “contributorship” initially proposed by Rennie et al15 in 1997, with the goal of eliminating the byline.5,14

We urge the editors of multidisciplinary biomedical journals to insist on involvement of diagnostic physicians such as pathologists and radiologists whenever intellectual contributions from these physicians are part of a published article. Diagnostic physicians must also recognize the importance of their contributions to publications in multidisciplinary journals, and where appropriate, they should undertake the full responsibility of authorship.

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