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EDITORIAL

Data sharing improves scientific publication: example of the "hydrops initiative"

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Major roles of scientific articles are to improve public health practice, to make scientific advances, and/or to share with colleagues the new technology that could help them to improve patient management.

Based on data scientists' expertise in machine learning algorithms and artificial intelligence, there is a growing implication of private companies in research, and a real risk of the exclusion of radiologists from the next major findings in our domain. With this regard, efforts to improve the reproducibility and integrity of science are crucial to ensure persistent academic interest in this specialty.

A first step towards preventing false science or fake news and mitigating irreproducibility is to provide access to raw data codes used [1]. Sharing Dicom Files valorizes the contribution of radiologists in the research pipeline:

The availability of Dicom Files not only allows other researchers to judge the representativity of reports and the discernment of authors in selecting images for publication but also promotes better understanding of the proposed new method and improves the relevance of questions from other radiologists and/or reviewers.

Opening our databases for further analyses, meta-analyses, or method validation is an excellent way to address deeply fundamental questions about human diseases. The Human Connectome Project (http://www.humanconnectomeproject.org/), the ADNI database for Alzheimer's diseases (http://adni.loni.usc.edu/), or the Michael J. Fox Foundation Experimental data for Parkinson's research (https://www.michaeljfox.org/) are leading examples of public access to data which have led to major advances in knowledge and numerous publications in top-ranked journals.

A practical marker of the usefulness of this approach could be the number of citations of papers with a link to downloadable data. Citations remain a recognized measure of academic influence, indicating the value of work for later studies; however, they have some limitations. There is a trend towards a decrease in the number of uncited papers in scientific research [2].

A recent example of such an initiative is hydrops evaluation using magnetic resonance imaging (MRI). In the last decade, numerous imaging papers from various research teams have shown the feasibility of in vivo visualization of excess endolymph liquid by MRI and its pathological consequences on the auditory or vestibular systems. This new imaging application is mainly due to the efforts of Prof Naganawa's team in Nagoya (Japan) who developed all the steps needed for the scientific validation in humans, including the technical development of the acquisition sequences and application to various disease models using a semi-quantitative evaluation [3]. We have recently challenged this classification in *European Radiology* [4, 5] with a new grading method that relies on the anatomical distinction between two structures of the inner ear: the saccule, which plays a role in balance during vertical movements, and the utricle, a key structure involved in static equilibrium during horizontal movements, such as when driving a car.

Both classification methods have advantages and drawbacks in terms of reproducibility and feasibility in various pathological conditions and depend on the MRI scan technique. In view of the currently somewhat heated debate around the clinical application and interpretation of hydrops images [6], we have proposed to share our raw data (Dicom Files) [7]. Because we obtained approval for a research protocol involving the injection of contrast media in healthy volunteers from the French Agency for Food, Environmental and Occupational Health, we feel essential to share this opportunity with the wider research community.

The MRI acquisitions in healthy volunteers may provide other researchers with a control group for their studies and

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enable them to avoid new injections in asymptomatic adults. The MRI acquisitions in patients come from various manufacturers (Philips, Siemens, General Electric) with different magnetic fields (1.5 and 3 Tesla) for helping radiologists to set their own sequences and for the subsequent reports.

Our first sample of data is restricted due to the new recommendations coming from the EU's General Data Protection Regulation (GDPR), which makes it obligatory for radiologists to obtain the explicit consent of subjects before placing their anonymized data in online databases, including databases for research purposes. We hope that other research teams will partake in this initiative by uploading radiological data online, so as to allow us to collectively improve and compare methods of acquisition and grading in the field of Hydrops imaging, with the goal of improving patient management based on MRI information.

Within the first weeks after online publication of the database, we have already received numerous requests for download authorizations from all over the world, sharing our enthusiasm on this fascinating topic.

These data can be downloaded for both research and/or educational purposes. Requests should be submitted via the online form available at: https://shanoir.irisa.fr/shanoir-ng/accountRequest with the following indications: concerned study: "hydrops"; "my contact in Shanoir: "Arnaud Attye"; role in the study: "European Radiology."

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Compliance with ethical standards

Guarantor The scientific guarantor of this publication is Arnaud Attyé.

Conflict of interest The authors of this manuscript declare no relationships with any companies, whose products or services may be related to the subject matter of the article.

Statistics and biometry N/A

Informed consent Written informed consent was obtained from all subjects in this study.

Ethical approval Institutional Review Board approval was obtained.

Study subjects or cohorts overlap Some study healthy subjects have been previously reported in European Radiology.

Methodology N/A

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