

Chapter-20

Writing an acceptable and effective case report

(A guide for beginners; that can be used by experts
as well)

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“Variability is the law of life, and as no two faces are the same, so no two bodies are alike, and no two individuals react alike and behave alike under the abnormal conditions which we know as disease.” (Sir William Osler)

Chapter Objectives

By reading this chapter the reader will ideally become able to:

- * Understand importance of a case report in the medical literature.
- * Recognize suitable material for writing a case report.
- * Write an acceptable case report.

Preamble

Medics experience “variability” as the law of life throughout their careers. They come across the word “variations” as soon as they start learning in their first days at medical schools. They learn about structure or location of an organ, route of a nerve or branches of an artery with a note that *“some variations are known, and any variation is possible”*. They are taught the concept of “range” about physiological and biochemical parameters, that clearly indicates that nothing is fixed. While learning in the laboratories they frequently find hemoglobin of

a friend more than the maximum of the range written in the laboratory manual, or one of the fellow student being unable to read a chart in the Ishihara charts for testing color blindness. The values for normal lung functions in a petit short statured person will be totally abnormal for a well-built tall person. They learn that there are so many drugs that can be prescribed for the same disease because any given drug might not be suitable for every patient with the same disease. This knowledge of variability is more affirmed when they learn about possibility of “idiosyncrasy” to a drug. Then they come across museums that are proudly displaying strange specimens showing a wide spectrum of variability in gross or histological findings of the tissues. By the time they reach their clinical rotations they are already believing in the word variability. Once in touch with real patients they realize quickly that patients of the same disease do not have exactly matching presentations, laboratory or radiological findings, responses to treatment and the prognosis. Finally, they all appreciate that “variability is the law of life”.

As a useful member of medical community, it is our duty to record every variability that we come across. Then check if it has already been reported in the medical literature. If not so, then report it as a case report. This is how new diseases are discovered, new presentations of known diseases are recognized, new effects of medicines are noticed, new clinical trials are initiated, medicines are declared dangerous, surgical procedures are adapted and the knowledge is built up.

An example of a classical case report with an enormous impact is the report of 5 cases of *Pneumocystis carinii* pneumonia in homosexual men in Los Angeles published by Gottlieb et al in June 1981.¹ It covered complete history (including sexual activity) and investigations (including lymphocyte studies) of the five men. It was then rapidly followed by a stream of similar case reports from other authors. Within weeks the medical community named the syndrome as AIDS and the rest is history.

What is a case report?

“Medicine is a science of uncertainty and an art of probability.”
(Sir William Osler)

Case report is a type of medical writing that contributes something unusual to the medical literature. The commonest variety is a '*clinical case report*' that communicates something novel encountered during clinical practice. Traditionally case report has been regarded as the "first line of evidence". Its reliability is low in the hierarchy of study designs, as it is generally a solitary, unplanned and chance finding. Nevertheless, it is very important to record and share it as most if not all the higher study designs built up upon the hypotheses generated by these case reports.

Case report is a relatively simple form of medical writing. It does not involve research question, hypothesis, methods or statistical analysis. It, therefore, provides an ideal first stepping stone for the novice in the art of medical writing. A published case report is probably the most notable item in the CV of junior doctors and medical students when they compete for placements in internships, residencies or jobs.

Let us try to make concept of case report by learning from an example.

The common parasite "round worm" (*Ascaris lumbricoides*) infests humans and many animals living around humans. The adult worms live in small intestine. The eggs are passed in the feces of the host. Eggs in feces have a potential to contaminate food of humans as well as different animals. Only the fertilized eggs are infective. Larvae hatch in the new host, penetrate intestinal mucosa, and then reach the systemic circulation via portal circulation or lymph. The larvae station themselves in the lungs for about two weeks, then penetrate alveolar walls, move into the bronchial tree, ascend, reach the throat and are then swallowed. They reach small intestine to get mature, stay there for their life and then produce eggs to repeat the cycle. The symptoms of 'ascariasis' depend upon the number of worms present. The symptoms can range from fatigue and weight loss on one end to severe abdominal pain.

Have you found anything unusual in the above description? Surely not. This is known to every one of medics and even high school children. Therefore, no part of this description can be a case report. Let us take the same description further.

The same worms during their various stages of life cycle and migration appear at strange places and cause unusual complications. Some more frequent presentations like intestinal obstruction, worm in biliary tract or coming out of mouth or nose in anesthetized patients have been added to the textbooks. Several such cases have been reported in the medical literature and new cases always keep on coming. Here follows a list of some selected case reports about finding *Ascaris* larvae at unusual places over the last 80 years. Just by reading the citations one can understand what is a “case report” about ascariasis, and why it is still reportable.

- * Calhoun FP. Intra-Ocular Invasion by the Larva of the *Ascaris*: Report of a Case with Unusual Complications. *Archives of Ophthalmology*. 1937 Dec 1;18(6):963-970.
- * Beautyman W, Woolf AL. An ascaris larva in the brain in association with acute anterior poliomyelitis. *The Journal of Pathology*. 1951 Oct 1;63(4):635-647.
- * Okamura T, Maekawa T. An interesting case of duodenal diverticulum, with straying of *Ascaris lumbricoides* into it. *Int Rec Med*. 1961 Apr;174:259-263
- * Kuzu MA, Öztürk Y, Özbek H, Soran A. Acalculous cholecystitis: ascariasis as an unusual cause. *Journal of gastroenterology*. 1996 Oct 10;31(5):747-749.
- * Goyal A, Vishwakarma SK, Kumar R. Abnormal migration of ascaris into the middle ear. *Indian journal of pediatrics*. 1998 Jan 1;65(1):147-148.
- * Balasubramaniam M, Sudhakar P, Subhashini M, Srinivasan S, Padma M, Chopra V. *Ascaris lumbricoides* in the lacrimal passage. *Indian journal of ophthalmology*. 2000 Mar 1;48(1):53.
- * Alexakis LC. *Ascaris lumbricoides* roundworms visible on a plain non contrast abdominal x-ray in a patient presenting with gastric outlet obstruction. *Pan Afr Med J*. 2017 Mar 29;26:184

Some of the things that can form a case report are:

- * A previously unknown condition (Example, AIDS, discovered

after a case report of pneumocystis carinii pneumonia in 5 homosexuals men)¹

- * A new, rare or unusual presentation or complication of a known disease (Example: A unique relapsing transverse myelitis accompanied by herpes simplex virus type-1 infection in a healthy female)²
- * A tumor in an unusual place (Example: Finding of an unusual presentation of Angiosarcoma in the heart of a patient)³
- * A normal tissue in an abnormal location (Example: Endometriosis of the intestines and vermiform appendix)⁴
- * A new effect or side effect of a medicine (example, Minoxidil, originally developed for ulcer healing was found to have a vasodilator/antihypertensive effect, and surprisingly after a while hair growth as a side effect)⁵
- * An alarming side effect of a medicine (Example phocomelia with thalidomide)
- * A new approach to manage a common condition.
- * An unusual etiology for a case
- * Mistakes in health care and their consequences
- * An unusual setting for patient care
- * Experimentation with a new health care equipment
- * Unusual drug-drug, drug-food, or drug-nutrient interactions
- * Unusual physiological finding
- * Unusual Anatomical finding

The rule of thumb: Anything mentioned in any text book or even a reference book is definitely not a case report.

How to find a “case” and what to do when a suspected case is found

Vision is the art of seeing things invisible. (Jonathon Swift)

If you are always on the lookout for unusual things, you will encounter them. The cases can suddenly pop up while taking a history, examining a patient, interpreting a laboratory report, seeing a tissue in a microscope. looking at an X-ray, performing a surgery, or following up a patient, to name just a few places

out of the many possible. Just keep your eyes of the mind open and preferred recording instrument handy. The recording instruments range from a pencil to modern sophisticated devices. In most cases notes from history, contact details will be required along with a few photographs.

Experience and learning, makes one realize that unusual findings in most cases are due to our knowledge limitations. Asking a colleague or a senior and in most cases a quick literature search clarifies the issue. Remember many type of findings are very short living. Quickly assess the time duration for which the finding or patient is available to you. If you suspect that it will not remain for long, or the patient might be lost, then start the recording process immediately without wasting time to ascertain its unusual nature from literature search. Even in extreme shortage of time do not forget to ascertain ownership of the case and contacts for consent, as discussed below.

A secret: Each one of your busy “seniors” always have stacks of unique materials waiting for an interested junior to write and report them.

Permission and Consent

Always seek permission from the physician or consultant in charge of the patient before writing the report. This will not only help in avoiding any embarrassment and legal action, but also it will ensure that no one else starts writing the report before you do. It is mandatory to acquire consent of a patient before reporting the case. Do not treat materials (blood, tissue, X-rays, etc) separate from the patient and the consultant in charge. Permission from consultant in charge and the consent is required even in cases where you are dealing with just a material obtained from patient and not directly with the patient. Keep contacts of the patient, as due to sensitivity of some materials many journals have their own consent forms to be signed by the patient or their next of kin, if the patient has passed away.

Literature Search

*“Real knowledge is to know the extent of one’s ignorance”
(Confucius)*

Literature search is carried out initially to ascertain if the noticed finding really qualifies to be called a rare finding. Nobody is perfect. Often what we think is unique or a new discovery turns out to be a previously reported thing. A careful literature search with proper search keywords quickly helps in identifying the uniqueness or rarity of a finding. The rule of thumb is this that if the finding is not mentioned in the latest editions of the reference books of the relevant specialty, and it has never been reported in the literature or just a few reports are there, this means that it is still an unsettled issue. In such a case your contribution will add to the knowledge by exposing a case or strengthening previously reported incidents.

A thorough literature search has to be carried out at the beginning when you are ascertaining that the case is really unusual, it is not present in a textbook or a reference book and is not reported extensively in the literature. If not so then you might not be able to publish it in a reasonable journal. It is always advisable to make a literature search before reporting the case to seniors, so that you have enough knowledge to prove your point.

The second time to make a targeted literature search is when you actually start writing the case report. Two parts namely Introduction and discussion will need support from medical literature to establish a case in introduction and then reaching a conclusion and suggesting a reason, hypothesis, explanation or mechanism in the discussion as mentioned below under the headings of introduction and discussion.

Pubmed (pubmed.gov) and scholar google (scholar.google.com) remain the best search engines to look for similar or relevant case reports. An example will help in understanding what to look for. If you have discovered a new side effect of diazepam, that has never been reported before, and you do not find any mention in the literature. Now look for rare side effects reported about the drugs belonging to the same group (benzodiazepines). If still no case is found then look for the untoward effects of other drugs with same uses (anxiolytics) or

similar mechanism of action (acting on GABA receptors). If still you find nothing then look for the drugs or conditions that cause the side effect that you have noticed.

The case material (recording the proofs and anonymizing)

From the patient's notes record the key points from the history, examination findings, relevant investigations, treatments (including operative findings) and outcomes. A few photographs showing the significant findings are always recommended.

Before submitting make sure to remove all patient information from every material submitted with the article. Anonymizing is must even after the consent. Face photographs must be avoided unless the unusual finding is on the face. In these situations, the photograph must be photoshoped in a way that the actual finding stays but the face is unrecognizable. Such photos must be shown to the patient or the next of kin to take consent to publish.

Choosing a journal to submit

This is the trickiest part. While no one refuses a case report with urgent and significant implications (like a new strain of influenza virus), most if not all high-profile journals do not accept "non-significant" case reports. Although everyone will recommend publishing in journals with impact factor, or at least Pubmed-indexed journals, yet in most cases the case reports are accepted mostly by very ordinary journals. Do not be put off, it is the normal phase of your ascendancy in medical writing. In the recent past famously JK Rowling's first book "Harry Potter and the Philosopher's Stone" was rejected by most of the publishers in the UK for being "too conventional, too long, too weird or too old-fashioned".

Generally, the specialty journals (related to the specialty to which the case relates to) accept the case reports easily. Likewise, there are dedicated journals that publish only case reports (examples: BMJ case reports, Journal of medical case reports, journal of case reports etc.) Consider the cost factor as well.

Caution: Never submit a manuscript to a second journal while you are waiting for decision from the first one. It might lead to embarrassment and even blacklisting in some instances.

The general format of case reports

The chances of publication are best for short and compact cases that have interesting title and a couple of good photographs. Compact is defined as covering all aspects of history, examination, investigations, managements as well as consent compressed in minimum possible words. Remember initial writing is difficult, trimming and converting to a compressed form later is easier.

Total permissible length (word count) and need for abstract, summary points or conclusion differ from journal to journal. However, the major components that are title, Introduction, Case report, Discussion and References are constant in all the journals.

a. Title

Keep the title short and crisp. A title that tells nothing does not create interest in the reader. A title that tells everything is like reading the last page of a novel before reading the rest of it. Example: The title “An unusual presentation of ascaris larvae” tells nothing, while the title “Ascaris Larvae in middle ear of a young girl” is short, crisp and creates interest.

b. Abstract

Abstract is required by most journals. Although it is placed in the beginning, however it is best written once the rest of the manuscript is completed. A summarized form of brief history, the main point of the case report (unusual finding) and the key message (conclusion, hypothesis, mechanism) is written. The word limit generally is 150-250 words. There are no references in the abstract. Include 3-5 keywords (MeSH based) in the end.

c. Introduction

This part is to prove that your finding is indeed “a first” or “rare”. Begin with introducing the disease, drug, procedure, etc. that your case is related to. Using most recent references narrate the common presentation, or effects, or results whatever the case may be. Now introduce your case in a single sentence. Then mention the findings of careful literature search, that

despite using all available resources you were unable to find similar or related case reports. Do not hide anything. It is better to say that (e.g.) “only two such cases have been reported in literature”, than to claim that “to the best of our knowledge no similar case has ever been reported”. Give references wherever required. Close the introduction by briefly referring again to the case report (that follows below).

d. Case Report

Describe the case exactly like you summarize it for your “busy and short of time” seniors on the bedside. Write it in easy language, covering all aspects in minimum possible words. The routine approach remains the same that is relevant history, findings on examination, investigations and management in that order, without any headings. Avoid unnecessary details and negative findings, unless the negative finding itself is important. While giving the important positive findings try to focus maximally on the unusual finding that makes the basis of the case being reported. Include one or two clear images wherever possible. However, just to follow this advice please do not add an image that does not show the main point of interest. In the section ‘case report’ do not give any explanation, hypothesis or conclusion about the unusual finding that you are reporting. If you have more than one case reports of similar finding, mark them as case-1, case-2 and so on upto maximum.

e. Discussion

This section is the most important argument that convinces the reviewers that your case is really a rare finding. Expand upon the point made in introduction about rarity of the finding. With help of appropriate references try to explain the probable reason for the finding under discussion. Try to draw parallels or identify differences from similar cases reported. Conclude by generating a hypothesis or theory for the unusual finding. Make recommendations for future research, awareness, caution or clinical practice. Create a sense of emergency if it is something of emergency nature.

f. Conclusion or Summary Points

Some journals require a brief conclusion, or summary points. In such cases the key message is written in one sentence for conclusion or a few bulleted messages as summary points.

g. References

It is recommended to keep the references to minimum (ten or less) and most relevant. The references are listed in the style requested by the journal (e.g Harvard, Vancouver etc).

Approval, Revision, and Submission

First check the checklist at **CARE guidelines** for reporting a case report.⁶ Once you are satisfied that you have accomplished all relevant points in it, this means you have finalized the case report. After you have finalized the case report, send the manuscript to all the coauthors to read and approve. Make necessary revisions and submit to the selected journal. Now a day most journals have online submission and that is the most convenient way. However, if you are submitting it as email attachment or as a hard copy then a covering letter may accompany the manuscript.

After Submission

The case report might be rejected after the editorial review. In that case generally no reason is given. Try your luck at another journal. If you are lucky the case report will go into the peer review cycle. Reviewers will read it and suggest improvements or ask for explanations. If they suggest revision, revise the manuscript as per suggestions. Preferably do not argue unless you feel that something was missed or misunderstood by the reviewers. Even in that case remain very diplomatic and polite in your response. Most case reports need at least two cycles of review and revision before final acceptance.

The ownership of a clinical case report

The 'ownership' of a case report very frequently creates problems. For example, a radiologist who discovers a variability, might think that the case belongs to him or her. However, the

patient is referred from the treating doctor or unit, and the finding is a chance finding for the radiologist. He or she therefore must notify the original treating doctor, and mutually determine the consent, authorship as well as acknowledgments.

Do not be miser to include as authors all those who are related. It is better to have many authors and many persons in acknowledgment than to face embarrassments and in some

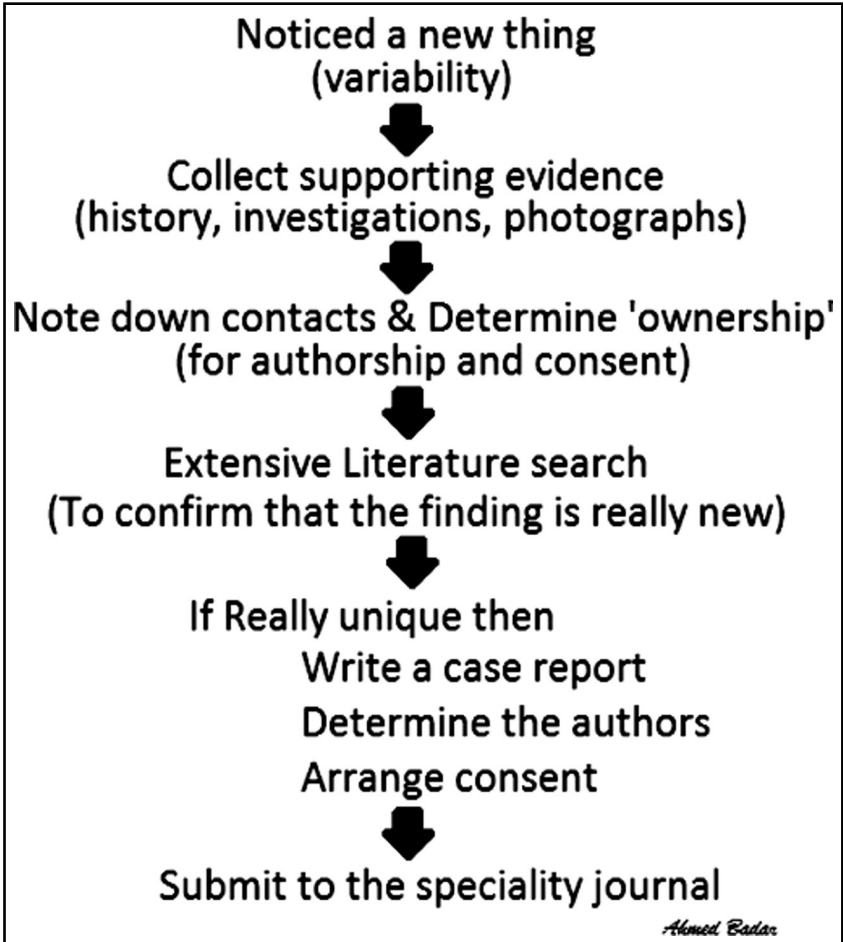


Figure-1: Steps from a discovery to reporting a case.
And meanwhile start looking for the next case.

cases legal actions afterwards. The editors of journals frequently carry out these unfortunate retractions, corrections and even black listings.

The general rules of authorship as determined by ICMJE apply as such in the case reports as well and must be followed.⁷

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