Why case reports need to have better evidence value

The history of case reports as a form of evidence in clinical researches has been somewhat non-linear. Before the modern statistical analysis of medical researches came into existence, case reports were the only methods of identifying a particular clinical picture. Hence the diseases were observed closely by a clinician and were given his/her name as a form of honor to the clinician. However, over the course of time with the advent of more accurate and well-organized statistical methods, the value of case reports decreased exponentially. In recent past this fall in value has been so much so that many journals with high impact factors have stopped publishing individual case reports and there has been a marked reduction in citations of cases as well as case series. Some journals have tried to re-kindle the importance of case reports as seen in the editorials of some journals as well as by launching new journals like BMJ case reports. In spite of the ups and downs that the literature of case reports has seen, their contributions to the medical researches are inevitable. Case reports have provided some of the most important inputs in the medical history as a whole. Here, we highlight several perspectives from which case reports remain invaluable forms of data. At the same time, we propound that the evidence level of case reports should be increased from mere "anecdotal data" to some other form of statistical evidence.

A case report is defined as the scientific documentation of a single clinical observation. Evidence-wise, case reports have been considered as the weakest forms of evidence such that they constitute to lowest most form of evidence known as anecdotal evidence. To understand the importance of case reports in medical research, let us first try to re-capitulate the meaning of medical research in first place. In 1997, the NIH Director’s Panel on Clinical Research issued a three-part definition of clinical research. According to this definition, three elements have been identified as important components of clinical research: (1) Patient-oriented research, defined as research conducted with human subjects (or on material of human origin such as tissues, specimens, and cognitive phenomena) for which an investigator (or colleague) directly interacts with human subjects. (2) Epidemiological and behavioral studies aimed to examine the distribution of diseases, the factors that affect health, and how people make health-related decisions; and (3) Outcomes and health services research which seeks to identify the most effective and most efficient interventions, treatments, and services. Interestingly, case reports are the only form of data which fit into all the three of these categories. The importance of case reports in patient-oriented research is self-implied because it deals with interactions with patients on one-to-one basis. Interestingly, case reports have been instrumental in epidemiological studies as well, especially for new infective diseases. A burning example where case reports have contributed to epidemiologic studies is the incidence and prevalence of swine flu in India was based on identifying individual case reports, which is just one of the several newly originating disease, which have been identified by case studies. Regarding the outcomes and health services research, case reports have been often discredited. However, the fact is that case reports have provide multi-dimensional contributions to this particular domain. In fact, drugs have been withdrawn from the market based on the observations of case reports. The contribution has extended to surgical sciences as well. The first face transplant and first uterine transplant were presented as single cases, and surgeons had first-hand experiences of the technical difficulties, immunological issues, and ethical dilemmas. Therefore, case reports are vital for all the dimensions of medical research. We therefore suggest that the evidence value of case reports should be enhanced and should be endorsed by various journals and should have citations for enhancement of medical knowledge.

However, some limitations of case reports should also be acknowledged here. The low strength of evidence provided by case reports and studies results from multiple intrinsic characteristics of such studies, including (1) lack of appropriate controls; (2) limited sample size (one to a few individuals); and (3) lack of blinding. All these intrinsic characteristics bring about significant bias and random errors. Because of the above limitations, interpretation of the results of case reports and studies and discussion of their implications must be done with great caution.

Overall we conclude that case reports are inevitable forms of medical data and will remain contributory as long as medical sciences exist. The main advantage is the ability of such reports to provide multi-dimensional data regarding an individual condition on a single individual. However, due to inherent problems in the methodology of case reports, they become weakened as evidences. We need more statistical interventions in individual case reports and case series to make them more powerful forms of data.

References

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