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Original article

Unusual occurrence reporting system: Sharing a ten years experience from a tertiary care JCIA accredited university hospital

Système de déclaration d'événements inhabituels : partage d'une expérience de dix ans d'un hôpital universitaire pakistanais accrédité de soins tertiaires JCIA

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ABSTRACT

Purpose. – Identifying a true measure of safety is challenging in radiation oncology. A culture of unusual reporting may however be used as an indirect measure for it. The purpose of this study is to share our experience of unusual occurrence reporting system, established in the Radiation Oncology section since 2006, the first of this nature in Pakistan.
Materials and methods. – Data is collected over the last ten years. An in-house online reporting system has been developed for reporting unusual events. All the reported events are evaluated retrospectively. The stage of unusual occurrence along the radiation therapy process, possible causes, severity and preventive measures taken are discussed.
Results. – Analysis of the 501 unusual occurrences reported over the last ten years has shown a substantial decrease in the number of significant mistakes observed. Of the total, 57 % unusual occurrences have been reported by radiation therapy technologists, including treatment preparation processes. Oversight is supposed to be the most common cause for unusual occurrences.
Conclusions. – The ten years experience with reporting and documenting of unusual occurrences resulted in a safety culture where every individual is willing to share any type of incident with a free well. Our experience at the Aga Khan University Hospital (AKUH) shows that the major reason for the occurrence of incidents was oversight. The majority of unusual occurrences were reported by radiation therapy technologists, as expected, since they handle the bulk of the treatment planning process.

Mots clés :
Sécurité des patients
Rapport d'incidence
Erreurs de radiothérapie

RÉSUMÉ

Objectif. – Identifier une véritable mesure de sécurité est difficile en oncologie radiothérapique. Une culture de rapports inhabituels peut toutefois être utilisée comme mesure indirecte. L'objectif de cette étude était de partager notre expérience du système de rapports d'événements inhabituels, établi dans notre service de radiothérapie oncologique depuis 2006, la première de cette nature au Pakistan.
Matériaux et méthodes. – les données ont été collectées au cours des dix dernières années. Un système de rapports interne en ligne a été mis au point pour signaler des événements inhabituels. Tous les événements signalés sont évalués rétrospectivement. Le stade de survenue inhabituelle au cours du processus de radiothérapie, les causes possibles, la sévérité et les mesures préventives prises sont discutés.

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Résultats. – L'analyse de 501 évènements inhabituels rapportés au cours des dix dernières années a montré une diminution substantielle du nombre d'erreurs significatives observées. En tout, 57 % des évènements inhabituels ont été signalés par les manipulateurs en radiothérapie, y compris au cours de la préparation du traitement. La surveillance est censée être la cause la plus fréquente d'évènements inhabituels.
Conclusion. – Cette étude sur dix ans de déclaration et de documentation d'évènements inhabituels a abouti à une culture de la sécurité où chaque individu est disposé à partager tout type d'incident avec un accès libre. Notre expérience à l'hôpital universitaire Aga Khan (AKUH) montre que la raison principale de la survenue d'incidents était la surveillance ; la majorité des évènements inhabituels a été signalée par des manipulateurs en radiothérapie, comme prévu, puisqu'ils gèrent l'essentiel du processus de planification des traitements.

1. Introduction

Incident learning in any health care facility is a key tool for improving the quality and safety of a procedure [1–4]. Radiotherapy is a highly complex procedure consisting of multiple processes involving a multidisciplinary team of professionals. A high level of accuracy is needed at every step so that a maximum tumour control is achieved with minimal risk to normal tissues. Such complexities may sometime lead to errors of various severities. Although major incidents are infrequent, the consequence can be extremely serious, as evident from the few, but high profile incidents that have been reported [5]. According to World Health Organisation (WHO) guidelines, quality assurance in radiotherapy plays an integral part in all types of the procedures [6]. This highlights the need for development and implementation of reporting and documentation of all types of incidents for learning purposes, continuous improvement and monitoring of radiotherapy practices. An incident learning and reporting system is therefore highly desirable in any radiotherapy clinic.

Since its establishment in 2006, the section of radiation oncology at the Aga Khan University Hospital, an average 800 new patients receive radiotherapy annually. The section is equipped with two Varian (Palo Alto CA) linear accelerators, a high dose rate brachytherapy machine, a conventional simulator and a CT simulator (PET/CT). The entire radiotherapy quality management system has been developed by a team of qualified physicists, radiation technologists and radiation oncologists. Initially, when the incident reporting system was introduced, reporting was made voluntary. The following year (2007), it was made mandatory by the quality improvement committee of the hospital to report and document all the incidents in radiotherapy. The quality improvement committee has also developed a written procedure for reporting and documenting all the incidents on a template (supplementary data). Incident reports are centrally collected, reviewed and discussed at monthly quality improvement committee meetings. For quality improvement, processes are continuously revised based on lessons learned from the mistakes. Anonymity is strictly observed to encourage reporting of all sorts of incidents. Over the last ten years of experience, this has proved to be a standard tool for bringing improvements in the system.

The purpose of this work is to present the last ten years experience of implementation and effectiveness of incident reporting and learning at AKUH, Pakistan. The root cause analysis and measures adopted for improvement in the processes are also discussed.

2. Material and method

2.1. Development of reporting and analysis system

With reference to the recommendations for incident learning database structure in radiation oncology by radiation oncology safety information system, a reporting system has been designed and implemented [7]. The system is referred to as "Unusual occurrence reporting system". The term 'unusual occurrence' is adopted instead of the incident to make the reporting system user friendly and acceptable to staff to report without any fear. All the events are electronically reported on a predefined format and submitted to quality improvement committee for review and further necessary action(s). We have evaluated all the reported events retrospectively. The effectiveness of quality checks at five major steps of radiotherapy procedure are analysed and quantified. At our institute, a number of quality checks are periodically performed, including clinical reviews, physics second checks, pretreatment quality assurance by radiation therapy technologists, and online/offline portal reviews. The chain of events sometime leads to unusual occurrences of various degrees. The unusual occurrences are classified as random and systematic errors during dose calculation, administration of external beam therapy/brachytherapy, patient identification, treatment setup, geometric miss, isocentre placement, bolus placement etc. A root cause analysis of individual unusual occurrences is performed, by analysing the contributing factors (i.e. failure to follow standard operating procedures, miscommunication, incomplete documentation, etc.), and personnel involved (i.e. physician, physicist, radiation therapy technologist or any other staff). Finally, the quality improvement committee after a thorough discussion recommends further necessary actions and measures to be taken to reduces and/or avoid such incidents in future (i.e., learning from incidents). Regular feedback is provided to the staff by the quality improvement committee for future improvements and adherence to safer practices. In addition, major occurrences are reported to the hospital central quality improvement committee via central online incident reporting system. Under such circumstances, patients and significant others are also informed.

2.2. Definitions and terminology

The following terminology is used for data classification and presentation. These definitions are taken from the book "Toward safer radiotherapy guide" and modified according to our needs [5].

2.2.1. Unusual occurrence

An unintended delivery of radiation during the course of radiotherapy, which could have or did result an unnecessary harm to the patient. These events can be divided into the following categories.

2.2.1.1. Clinically significant. Incorrect treatment with measurable/detectable adverse clinical effects on tumour coverage and or organs at risk. Any radiation given to incorrect target or patient for the whole treatment is also considered to be clinically significant.

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