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Case Report

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Use of neoprene mask-case report: patient sensitization during radiotherapy treatment

Abstract

Angiosarcoma is a rare and aggressive subtype of vascular sarcoma that affects the head and neck region in more than half of the cases especially the scalp. The case report referred to a 78-yearold male patient diagnosed with scalp epithelioid angiosarcoma with scattered lesions. When diagnosing treatment with systemic chemotherapy and due to a good chemotherapy response concomitance with local radiotherapy throughout the scalp was indicated by IMRT-RapidArc associated with 5mm neoprene mask and immobilization mask. Radiotherapy is one of the forms of treatment particularly the irradiation of the entire scalp due to its infiltrative characteristics and conventionally it uses the combination of photon and electron beams in lateral fields with wax bolus or superflab for dose superficialization. Due to the convexity of the entire scalp this type of bolus has disadvantages in daily reproducibility and air gap formation which may interfere with dose distribution. However, a treatment technique already described in the literature was chosen through IMRT which allows a more precise concave dose distribution, with protection of adjacent structures (brain) associated with a 5mm thick Neoprene mask for bolus effect. Therefore, the patient had to wear both masks (Neoprene + immobilization) during the treatment day which is the great challenge of this new form of treatment. The main of this report was to demonstrate the patient's tolerance to the technique employed in face of the daily positioning challenge made by the nursing staff and radiotherapy technicians so that the treatment could be successfully completed. Finally, it was evident that this innovative technique despite its challenges had optimistic results. The nursing team played a fundamental role in sensitizing this patient as well as the technical team in managing it daily.

Keywords: radiotherapy, neoprene, immobilization mask, head and neck, scalp

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Case presentation

RMOC patient, 78 years old, male, diagnosed on 11/11/18 with epithelioid angiosarcoma, presence of nodules in the scalp, temporal fronto region on the right, in contact with the external bone plate of the skull, lymph node in the cervical chain and nodule in the cervical chain popliteal fossa on the left. Undergoing chemotherapy (Doxorubicin 75mg/m² D1 + Olaratumebe 15mg/m² D1/D8) every 21 days for 3 cycles. Magnetic resonance imaging of the skull was performed on 12/05/18 where lesions on the scalp in the frontal region, in contact with the external bone plate of the skull, with signs of increased cerebral blood flow were inferred, inferring a "hot" perfusion, compatible with neoplastic etiology. Submitted on 12/10/18 to PET/CT showing thick hypermetabolic nodules in the subcutaneous scalp, prominent lymph node with FDG uptake in the cervical chain, nonspecific and hypermetabolic nodule in the left popliteal fossa, with thick and irregular walls, suggestive of necrosis . On 12/29/19, he underwent a new PET/CT and showed a reduction in the dimensions and glycolytic metabolism of lesions of nodular and lymph node lesions. Radiotherapy evaluation was requested to control residual disease present on the scalp, following the concomitance of systemic control with QT. The following procedure is prescribed: Radiotherapy of intensity modulated beam throughout the scalp with a dose of 60 Gy in 25 fractions of 2.4 Gy in pre QT lesion (PET/CT pre) and 50 Gy in 25 fractions of 2 Gy in all scalp, with bolus Neoprene mask with 3 to 5mm thickness + conventional immobilization mask.

Discussion

For total scalp radiotherapy, the bolus accessory is conventionally used under the entire scalp. Boluses are materials used to increase the dose at the entrance surface of a field or to compensate for a lack of tissue. Currently this bolus is made with a wax or superfleb plate (rectangular silicone plate). This use has been effective, but there are disadvantages for this type of technique.

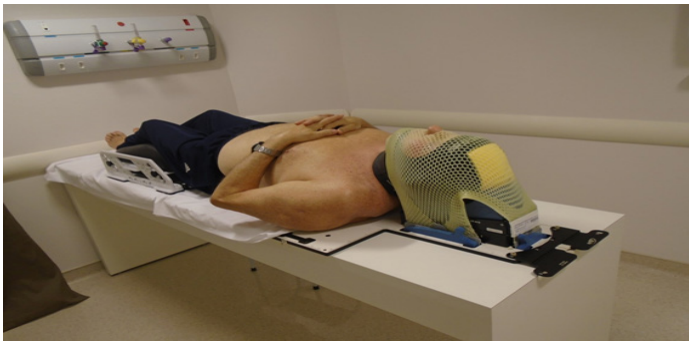
Both are very flexible, heavy, and difficult to reproduce in daily positioning, especially on a concave surface. For patients with regional structures, visible and/or neural lesions, the complexity and inefficiency of these types of accessories become even greater. Due to the natural curvature of the scalp, it is defined that the IMRT (Modulated Intensity Radiotherapy) technique is the best option, precisely because of its possibility of dose distribution, optimizing its distribution in a homogeneous way, with greater precision and presenting a better acceptable distribution for normal fabrics.

In view of this scenario, some studies have shown the possibility of improving this type of treatment, with something that does not increase the cost, is easily reproducible and also meets the need for patients with multiple injuries, as in this case, preserving the brain and other healthy tissues. Then, a Neoprene mask (3 to 5 mm thick) was used to simulate the first layer of the skin and to enable the dose to be shot exclusively on the scalp. For this, the patient used a Neoprene mask in addition to the usual immobilization mask, so that the positioning and its daily reproduction were effective.

Since the use of two masks, one on top of the other, creates discomfort for the patient and a feeling of suffocation as reported, we initiated a sensitization approach with the aim of increasing adherence and / or non-abandonment of treatment.

The process started in the medical consultation, with the demonstration of gain in terms of the result of the treatment

and conservation of healthy tissue, followed by a nursing consultation, accompanied with a dosimetrist, planning tomography recommendation, for whom the patient tried on as masks and you can try a neoprene mask. Giving heredity, the fixing accessory mold was made, where the use of two concomitant masks started.



On the first day of treatment there was also a nursing consultation before the start, in order to clarify new doubts and reassure the patient. The daily positioning and sensitization of the patient was carried out by the radiotherapy technicians who operated on all treatment sessions. Music therapy was also included for all sessions, in order to reassure and distract the patient during the time of delivery of the dose.

Final considerations

Bearing in mind that this was a long treatment, 25 fractions and concomitant with chemotherapy, where overall the patient's clinical condition went through a period of decline and constant oscillation, we can say that the team's work had a significantly positive result, so that there was no lack since this patient in his treatment sessions. The main objective of this report was to demonstrate the patient's tolerance to the technique used in the face of the daily positioning challenge made by the nursing team and radiotherapy technicians, so that the treatment could be successfully concluded. He ended the treatment of 25 fractions without complaints, absences and/or interruptions during the treatment sessions. Today, he is still in control of the disease, successfully stabilized locally and with no residual injury present so far.

The nursing teams and radiotherapy technicians continue to implement the same sensitization procedures for all patients using a mask-type immobilization accessory, regardless of the use or not of associated Neoprene, as well as maintaining music therapy for all types of treatment, increasing patient attendance on long treatments and receiving positive feedbacks related to discomfort at the time of treat-ment.

Acknowledgments

None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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