

Successful treatment of primary cutaneous angiosarcoma of the nose with sequential chemo- and radiotherapy



H. Herrscher^{a,*}, M. Bronnec^b, D. Antoni^{c,d}, J.-P. Ghnassia^e, P. Magnenet^b, J.-E. Kurtz^a, G. Noël^{c,d}

^a Oncology Department, ICANS Comprehensive Cancer Center, 17, rue Albert Calmette, F-67200 Strasbourg, France

^b Physic Department, ICANS Comprehensive Cancer Center, 17, rue Albert Calmette, F-67200 Strasbourg, France

^c Radiotherapy Department, ICANS Comprehensive Cancer Center, 17, rue Albert Calmette, F-67200 Strasbourg, France

^d Strasbourg University, CNRS, IPHC UMR 7178, Centre Paul Strauss, UNICANCER, F-67000 Strasbourg, France

^e Pathology Department, Paul Strauss Comprehensive Cancer Center, 3, rue de la porte de l'hôpital, F-67065 Strasbourg, France

1. Introduction

Cutaneous angiosarcoma is a rare type of tumor that represents approximately 2% of all soft tissue sarcoma [1]. This tumor grows mainly on the scalp or the face of elderly males [2]. The prognosis is very poor with a 5-year survival rate from 12% to 31% and a median overall survival (OS) about 15 months [3,4].

The optimal treatment is considered to be surgery with wide excision margin followed by adjuvant radiotherapy. Chemotherapy is usually used for metastatic disease. We want to present a successful strategy of treatment with chemotherapy and radiation therapy.

2. Case report

A 67 year-old man was diagnosed with a primary cutaneous angiosarcoma of the nose. Clinical presentation was a fast-growing erythematous tumor of the nasal pyramid with multiple telangiectasias (Fig. 1A).

The patient performed a facial magnetic resonance imagery (MRI) that revealed a non-specific sub-cutaneous thickening, which, could be either a granuloma, a lymphoma or a soft tissue sarcoma (Fig. 1B).

A cutaneous biopsy was performed that revealed a primary cutaneous angiosarcoma of the nose with a high-proliferation rate, ERG and CD31 expression in immunohistochemistry (Fig. 2).

Due to the local extension of the tumor, surgery procedure should have been aggressive and dilapidating to reach free-margins. After discussions between surgeon, oncologist, radiation oncologist and the patient, this latter did not consent to follow the surgical procedure. Consequently, the multidisciplinary board decision proposed to combine chemotherapy and radiotherapy with a sequential schedule.

The patient received a neo-adjuvant chemotherapy of 80 mg/m² weekly paclitaxel for a total of 9 cycles. He had an excellent clinical response (Fig. 3).

Three weeks after the end of chemotherapy, the patient was given intensity modulate radiation.

therapy (IMRT). For this treatment, a customized personalized head contention was performed. GTV (Gross tumor Volume) was defined from the initial MRI matched with a 2.5 mm-slices CT scan without injection of enhancement agent. Clinical target volume (CTV) including GTV with a large cutaneous extension of 3 cm but excluding eyes and the eyelids. PTV added a 3-mm margin to the CTV (Fig. 4).

Total dose prescription was with 60 Gy in 30 fractions of 2 Gy. Treatment was delivered with tomotherapy (Accuray, Sunnyvale, California, United States). Dose-Volume Histograms (HDV) showed that for PTV V_{95%}, V_{90%}, V_{50%} and V_{2%} were 58.6 Gy (97.7%), 58.9 Gy (98.2%), 59.6 Gy (99.3%) and 61.2 Gy (102%), respectively. Right and left lens received a maximal dose of 25.4 Gy and 27.0 Gy, respectively (Fig. 4). Right and Left eye globes V_{30Gy} and V_{50Gy} were 29.9% and 2.7% and 36.4% and 2.7%, respectively. Maximal dose into the chiasm was 23.6 Gy. Set-up of the patient was daily controlled by MV-CT OBI (on-board imaging).

Early toxicities were essentially grade 2, ocular and nasal dryness. The patient did not complaint late toxicities. Last view analysis did not show any deterioration of the different measures. Last MRI, performed at two year of the completion of irradiation treatment, did not show any relapse (Fig. 5) and CT scan of the chest did not detect any systemic dissemination. Clinically, no fibrosis, or telangiectasia was observed (Fig. 6).

3. Discussion

Although there is no standard of care, the treatment of localized primary cutaneous sarcoma of the head is usually a combination of surgery and radiotherapy [5]. However, provided that this type of tumor arises frequently in elderly population, this therapeutic approach can be poorly tolerated, especially due to the extensiveness of the surgery to obtain wide excision margins [6]. Thus, several other approaches have been evaluated as an alternative to surgery.

Exclusive radiotherapy has shown good results in terms of local control and survival of cutaneous angiosarcoma but it seems to be an insufficient modality of treatment whether this tumor arises on

* Corresponding author.

E-mail address: h.herrscher@icans.eu (H. Herrscher).

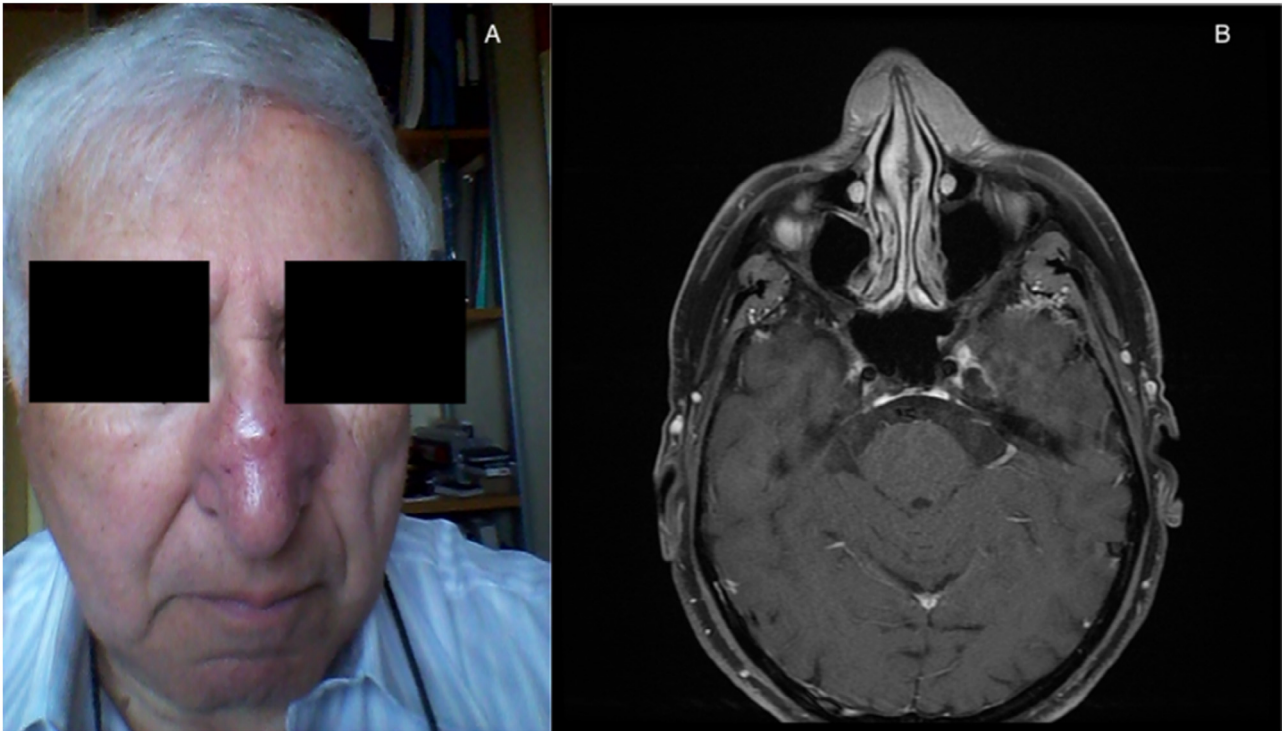


Fig. 1. Initial presentation of the tumor A-Clinical aspect of the angiosarcoma B-MRI T1 sequence aspect of the angiosarcoma before treatment.

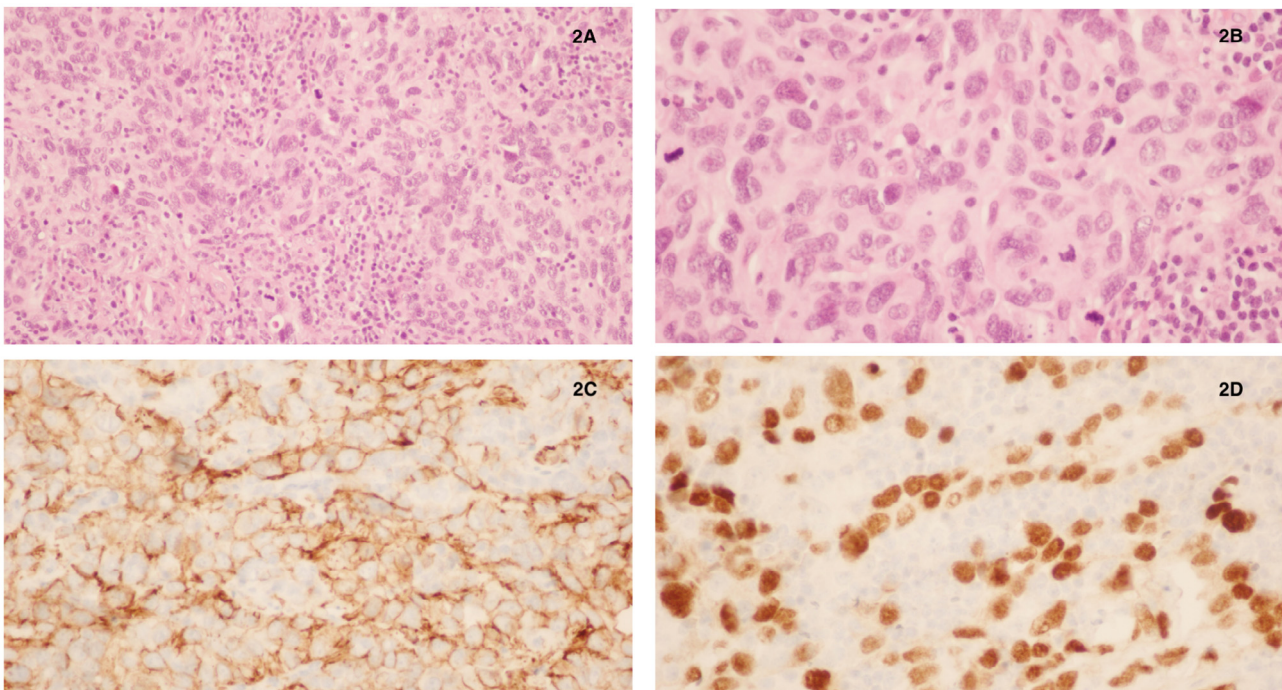


Fig. 2. Histological characteristics of the angiosarcoma 2A: hematoxylin-eosin: atypical endothelial cells involving the dermis and surrounding atypical vascular spaces 2B: sarcomatous proliferation: atypical epithelioid cells 2C: immunohistochemistry: CD31 membranous expression of tumor cells 2D: immunohistochemistry: ERG nuclear expression of tumor cell.

the head [7]. Moreover, a retrospective analysis of 48 angiosarcoma of the head showed that either surgery and radiation therapy represent independent prognosis factors in OS with a significant survival advantage for patient treated with both modalities [8]. Moreover, the authors concluded that the use of chemotherapy

and radiotherapy did not improve survival, but the used drug in the series was docetaxel and not paclitaxel.

There is one similar case report in the literature that provides similar outcomes to the current case [9]. The use of paclitaxel in this particular type of tumor could be relevant due to the patho-



Fig. 3. Clinical complete response after neo-adjuvant chemotherapy.

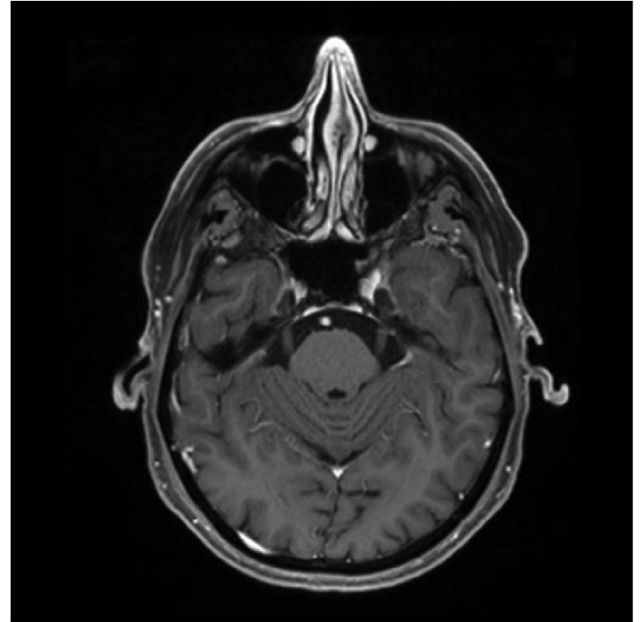


Fig. 5. MRI T1 sequence aspect of the angiosarcoma after treatment.

genesis of the angiosarcoma. The angiogenesis is one of the oncogenic mechanism of development of angiosarcoma, mostly

depending of Vascular Endothelial Growth Factor D (VEGF-D) [10]. Weekly paclitaxel is known to have an anti-angiogenic effect due to an increased endothelial uptake of this drug [11].

In conclusion, the sequential treatment with chemotherapy with paclitaxel and IMRT was efficient in the treatment of localized

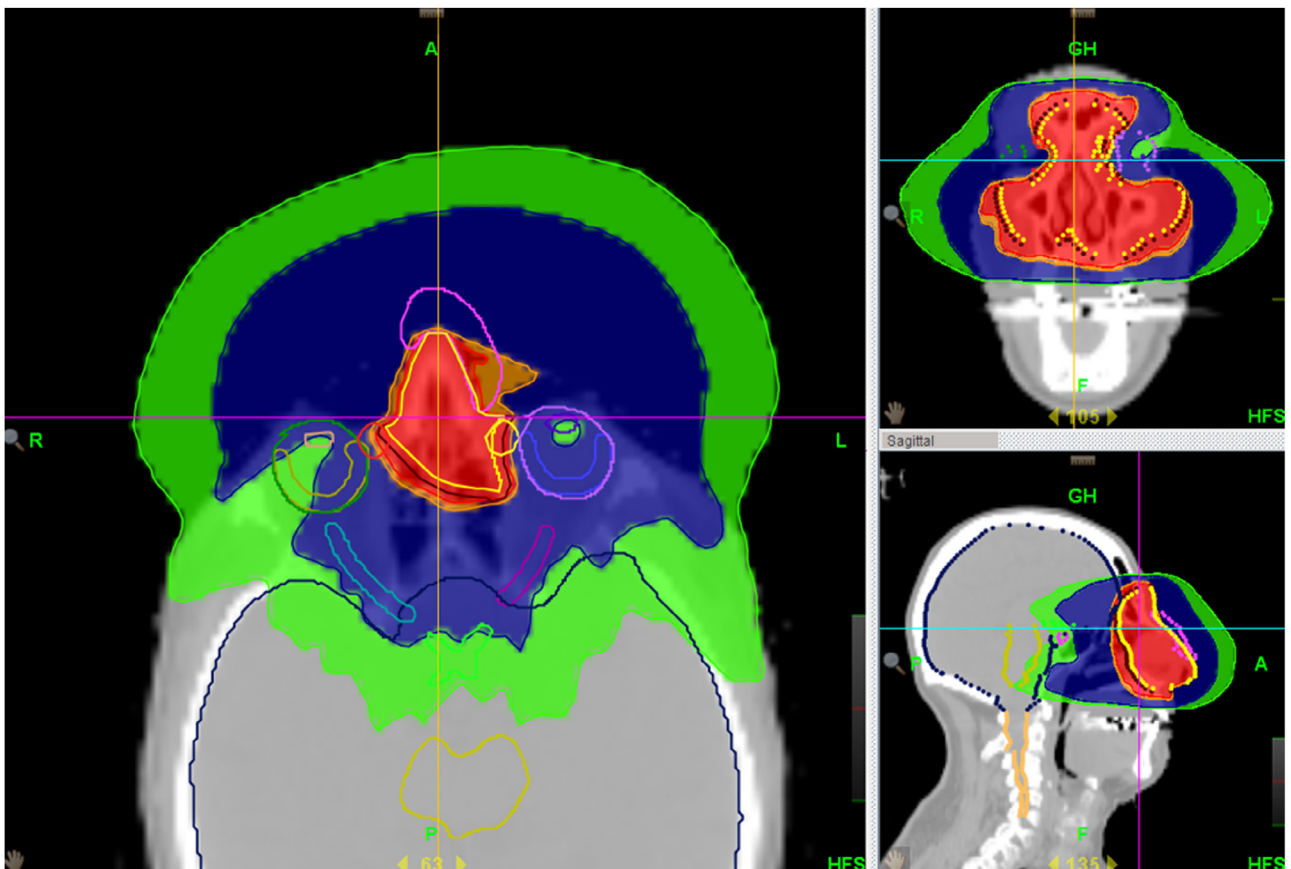


Fig. 4. Irradiation planification and dose distribution Purple margins: GTV Yellow line: CTV Brown line: PTV Red area: 57 Gy isodose Orange area: 54 Gy isodose Blue area: 20 Gy isodose Green area: 15 Gy isodose. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)



Fig. 6. Clinical aspect two years after the treatment.

primary cutaneous angiosarcoma of the nose with a good toxicity profile.

4. Disclosures

Hugo Herrscher, Maud Bronnec, Delphine Antoni, Pascale Magne-net, Jean-Pierre Ghnassia and Georges Noel have nothing to disclose.

Jean-Emmanuel Kurtz reports non-financial support from Roche, non-financial support from Pharmamar, personal fees from Astra Zeneca, personal fees from Tesaro, outside the submitted work.

References

- [1] Dosssett LA, Harrington M, Cruse CW, Gonzalez RJ. Cutaneous angiosarcoma. *Curr Probl Cancer* 2015;39:258–63.
- [2] Shustef Elina, Kazlouskaya Viktoryia, Prieto Victor G, Ivan Doina, Aung Phyu P. Cutaneous angiosarcoma: a current update. *J Clin Pathol* 2017;70(11):917–25. <https://doi.org/10.1136/jclinpath-2017-204601>.
- [3] Mendenhall WM, Mendenhall CM, Werning JW, Reith JD, Mendenhall NP. Cutaneous angiosarcoma. *Am J Clin Oncol*. 2006;29:524–8.
- [4] Fury MG, Antonescu CR, Van Zee KJ, Brennan MF, Maki RG. A 14-year retrospective review of angiosarcoma: clinical characteristics, prognostic factors, and treatment outcomes with surgery and chemotherapy. *Cancer J Sudbury Mass* 2005;11:241–7.
- [5] Penel N, Marréaud S, Robin Y-M, Hohenberger P. Angiosarcoma: state of the art and perspectives. *Crit Rev Oncol Hematol* 2011;80:257–63.
- [6] Sinnamon AJ, Neuwirth MG, McMillan MT, Ecker BL, Bartlett EK, Zhang PJ, et al. A prognostic model for resectable soft tissue and cutaneous angiosarcoma. *J Surg Oncol* 2016;114:557–63.
- [7] Ward JR, Feigenberg SJ, Mendenhall NP, Marcus RB, Mendenhall WM. Radiation therapy for angiosarcoma. *Head Neck* 2003;25:873–8.
- [8] Ogawa K, Takahashi K, Asato Y, Yamamoto Y, Taira K, Matori S, et al. Treatment and prognosis of angiosarcoma of the scalp and face: a retrospective analysis of 48 patients. *Br J Radiol* 2012;85:e1127–33.
- [9] Ravo V, Falivene S, De Chiara A, De Palma G, Pizzolorusso A, Di Franco R, et al. Treatment of cutaneous angiosarcoma of the face: efficacy of combined chemotherapy and radiotherapy. *Tumori* 2013;99:e211–5.
- [10] Amo Y, Masuzawa M, Hamada Y, Katsuoka K. Serum concentrations of vascular endothelial growth factor-D in angiosarcoma patients. *Br J Dermatol* 2004;150:160–1.
- [11] Merchan JR, Jayaram DR, Supko JG, He X, Bublely GJ, Sukhatme VP. Increased endothelial uptake of paclitaxel as a potential mechanism for its antiangiogenic effects: potentiation by Cox-2 inhibition. *Int J Cancer* 2005;113:490–8.