Hydroxyurea

Also known as hydroxycarbamide, is a medication used in sickle-cell disease, chronic myelogenous leukemia, cervical cancer, and polycythemia vera.

In sickle-cell disease, it decreases the number of attacks. It is taken by mouth.

It is believed to work by blocking the making of DNA.

Hydroxycarbamide was approved for medical use in the United States in 1967.

It is on the World Health Organization's List of Essential Medicines, the most effective and safe medicines needed in a health system.

Hydroxycarbamide is available as a generic medication.

The wholesale cost in the developing world is about 0.35 to 0.47 USD per day.

In the United States it costs less than 25 USD a month.

Role of hydroxyurea as an adjuvant treatment after Gamma knife radiosurgery for atypical (WHO grade II) meningiomas [1].

Side effects

- Hydroxyurea modulates thiol-disulfide homeostasis in the yeast endoplasmic reticulum
- An Unexpected Cause of Severe Metabolic Acidosis
- Annual PM2.5 exposure and clinical, laboratory, and stroke-risk outcomes in pediatric sickle cell disease
- Hematopoietic Stem Cell Transplantation in Sickle Cell Disease
- The feasibility of pharmacokinetic-based dosing of hydroxyurea for children with sickle cell anaemia in Uganda: Baseline results of the alternative dosing and prevention of transfusions trial
- Germline mutagenicity of molnupiravir and its active form, β-d-N4-hydroxycytidine, in Caenorhabditis elegans evaluated using whole-genome sequencing
- Dermatomyositis-like Eruptions, Hydroxyurea-Associated Squamous Dysplasia, and Nonmelanoma Skin Cancer: A Case Report and Systematic Review
- Hydroxyurea Mitigates Heme-Induced Inflammation and Kidney Injury in Humanized Sickle Cell Mice

Common side effects include bone marrow suppression, fevers, loss of appetite, psychiatric problems, shortness of breath, and headaches.

There is also concern that it increases the risk of later cancers.

Use during pregnancy is typically harmful to the baby.

Case series

Kim et al., retrospectively reviewed the medical records of 84 patients with Atypical Meningiomas (ATMNGs) diagnosed in the period from January 2000 to December 2014. Clinical data included patient sex and age at the time of surgery, presenting symptoms at diagnosis, location and size of tumor, extent of surgery, use of postoperative radiotherapy or hydroxyurea chemotherapy, duration of follow-up, and progression. In terms of the extent of surgical resection, incomplete resection was defined as Simpson grade II-V.

Among the 85 patients, 55 (65.5%) patients underwent incomplete resection; 24 (43.6%) were treated with adjuvant hydroxyurea (group A), and 20 (36.4%) with postoperative radiotherapy (group B), and 11 (20.0%) underwent conservative treatment after surgery (group C). Twenty-five (45.5%) patients experienced the progression of tumors during the follow-up period (mean 47.7 months, range 12.4-132.1 months); 8 of 24 (33.3%) patients in group A, 7 of 20 (35.0%) patients in group B, and 10 of 11 (90.9%) patients in group C. The mean progression-free survival (PFS) was 30.9 months (range 6.4-62.3 months); 46.2 months in group A, 40.4 months in group B, and 11.9 months in group C ($p=0.041$). Multivariate analysis showed that Simpson grade ($p=0.040$), adjuvant treatment after surgery ($p<0.001$), increased Ki67 ($p=0.017$), mitotic index ($p=0.034$), and overexpression of p53 ($p=0.026$) predicted longer PFS.

This investigation suggested that adjuvant treatment after incomplete resection of ATMNGs are associated with longer PFS than conservative treatment, and that there is no difference of PFS between hydroxyurea chemotherapy and radiotherapy after surgery. Therefore, hydroxyurea chemotherapy can be considered as another adjuvant tool for the ATMNGs if the postoperative adjuvant radiotherapy cannot be applicable [2].

Case reports

Porokeratosis encompass a group of acquired and familial, preneoplastic, keratinization disorders, clinically characterized by atrophic macules or patches with a peripheral keratotic rim, the cornoid lamella. Genetic background is recognized as crucial in its pathophysiology, while immunosuppression and ultraviolet radiation represent triggering factors. We report the case of a woman who developed disseminate superficial actinic porokeratosis following the intake of hydroxyurea for a polycythaemia vera. Clinical, dermoscopic and histopathology data are showed, and the role of drug as a second-hit mutation trigger is discussed [3].

1)
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2)
Kim J, Kim KH, Kim YZ. The Clinical Outcome of Hydroxyurea Chemotherapy after Incomplete Resection of Atypical Meningiomas. Brain Tumor Res Treat. 2017 Oct;5(2):77-86. doi: 10.14791/btrt.2017.5.2.77. Epub 2017 Oct 31. PubMed PMID: 29188208; PubMed Central PMCID: PMC5700031.
3)
Romagnuolo M, Riva D, Alberti Violetti S, Di Benedetto A, Barberi F, Moltrasio C. Disseminated superficial actinic porokeratosis following hydroxyurea treatment: A case report. Australas J Dermatol.

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