Capecitabine

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Capecitabine, sold under the brand name Xeloda among others, is a chemotherapy medication used to treat breast cancer, gastric cancer, and colorectal cancer. For breast cancer, it is often used together with docetaxel. It is taken by mouth

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Randomized controlled trials

To investigate the efficiency of capecitabine (CAP) plus temozolomide (TEM) in aggressive pituitary neuroendocrine tumor after tumor resection and its impact on serum prolactin (PRL), insulin-like growth factor 1 (IGF-1), and growth hormone (GH) levels.

From January 2017 to January 2020, 80 patients assessed for eligibility receiving transsphenoidal tumor resection for refractory pituitary neuroendocrine tumor in the Department of Neurosurgery of our hospital were recruited. They were randomly distributed at a ratio of 1: 1 via the random number table method to receive either bromocriptine and TEM (control group) or bromocriptine plus combination chemotherapy of TEM and CAP (study group). The two groups were compared in terms of clinical efficacy and serum levels of PRL, IGF-1, and GH.

The objective response rate (ORR) was 87.50% and 67.50% in the study group and the control group, respectively (P=0.032). Before treatment, the two groups had similar levels of PRL, IGF-1, and GH. After treatment, PRL levels in the study group were lower than that in the control group (278.35 ± 39.25 versus 326.35 ± 42.45, $P < 0.001$). Compared with the control group, IGF-1 levels in the study group were also lower (311.78 ± 28.82 versus 364.35 ± 31.35, $P < 0.001$). The study group presented markedly lower levels of thyroid-stimulating hormone (TSH) and higher serum levels of free thyroxine-4 (FT-4) and adrenocorticotropic hormone (ACTH) versus the control group ($P < 0.05$). The incidence of adverse events was comparable between the study group (30.0%) and the control group (22.5%) ($P > 0.05$). All eligible patients had similar progression-free survival (PFS) after chemotherapy.

For patients with refractory pituitary neuroendocrine tumor, the combination chemotherapy of CAP and TEM significantly improves clinical outcomes and corrects hormonal disturbances, with a good safety profile, but its long-term efficacy requires further investigation [1].

Case reports

A 43-year-old man with moderately differentiated rectal adenocarcinoma on capecitabine presented to the emergency department with complaints of nausea, vomiting, diarrhea, weakness, and lower abdominal pain for several days. Laboratory findings include grade 4 neutropenia (ANC 10) and thrombocytopenia (platelets 36,000). Capecitabine is used as a component of first-line adjuvant therapy by approximately 2 million patients worldwide each year. Capecitabine is metabolized to fluorouracil via the enzyme dihydropyrimidine dehydrogenase (DPD). With worsening pancytopenia and diarrhea, genetic testing for DPD deficiency was sent. Prompt treatment with uridine triacetate was initiated for presumed DPD deficiency. Unfortunately, he passed away from an infectious complication and was later confirmed to have a heterozygous DPYD*2A mutation.

The case demonstrates uneven testing guidelines for DPD prior to initiating 5-FU chemotherapy, appropriateness of treating with uridine triacetate, and analysis of next-generation sequencing (NGS) on tumor samples and co-incidentally obtaining germline DPD deficiency status. Our case also highlights the severe clinical impact of having DPD deficiency even with early uridine triacetate therapy.

Conclusion: It is our recommendation to perform DPD deficiency in curative intent cancer treatment and this information can increasingly be obtained in standard tumor NGS profiling, a growing norm in medical oncology [2].

A 48-year-old female patient who consulted for recent back pain, with a final diagnosis of T10 solitary plasmacytoma and synchronous intrahepatic cholangiocarcinoma. Imaging suggested cholangiocarcinoma with bone metastasis. The patient underwent neurosurgical management with laminectomy, arthrodesis, and arthrectomy, with biopsies revealing monotypic kappa plasmacytic proliferation. Liver biopsies revealed an adenocarcinoma with cytokeratin 19, cytokeratin 7, N-cadherin, and high expression of carbonic anhydrase IX. The plasmacytoma was treated with external radiotherapy. The cholangiocarcinoma was treated with selective internal radiation therapy and concomitant systemic treatment with combinations of cisplatin and durvalumab, with capecitabine during radiotherapy, and switched to gemcitabine after completion of irradiation. One year after initial management, imaging revealed a partial metabolic response of the intrahepatic cholangiocarcinoma and a complete metabolic response of the plasmacytoma. This case illustrates the importance of not ignoring two primary tumors and the management of two concomitant treatments exploiting potential therapeutic synergies and limiting expected toxicities [3]

Nelson's syndrome is considered a severe side effect that can occur after total bilateral adrenalectomy in patients with Cushing's disease. It usually presents with clinical manifestations of an enlarging pituitary tumor including visual and cranial nerve alterations, and if not treated, can cause death through local brain compression or invasion. The first therapeutic option is surgery but in extreme cases of inaccessible or resistant aggressive pituitary tumors; the off-label use of

chemotherapy with capecitabine and temozolomide can be considered. However, the use of this treatment is controversial due to adverse events, lack of complete response, and inability to predict results. Mirallas et al. present the case of a 48-year-old man diagnosed with Nelson's syndrome with prolonged partial response and significant clinical benefit to treatment with capecitabine and temozolomide [4].

1)
Wang X, Hu C, Li Y, Ren B, Yin G. Chemotherapy of Capecitabine plus Temozolomide for Refractory pituitary neuroendocrine tumor after Tumor Resection and Its Impact on Serum Prolactin, IGF-1, and Growth Hormone. J Oncol. 2022 Mar 21;2022:8361775. doi: 10.1155/2022/8361775. PMID: 35356252; PMCID: PMC8959954.
2)
Shamaei Zadeh A, Roberts D, Williams A, Pandey D, Villano JL. Dihydropyrimidine enzyme activity and its effect on chemotherapy toxicity: importance of genetic testing. Cancer Chemother Pharmacol. 2025 Jan 18;95(1):26. doi: 10.1007/s00280-024-04740-x. PMID: 39825952.
3)
Touchefeu Y, Barbaud M, Prin-Felix L, Samarut E, Jamet B, Ollivier L, Bouda D. Case Report of Concomitant Diagnosis of Locally Advanced Intrahepatic Cholangiocarcinoma and Solitary Plasmacytoma of T11 Vertebra: Impact on Diagnostic and Clinical Management. Curr Oncol. 2024 Sep 2;31(9):5164-5170. doi: 10.3390/curroncol31090382. PMID: 39330010; PMCID: PMC11431636.
4)
Mirallas O, Filippi-Arriaga F, Hernandez Hernandez I, Aubanell A, Chaachou A, Garcia-Alvarez A, Hernando J, Martínez-Saez E, Biagetti B, Capdevila J. Aggressive Pituitary Macroadenoma Treated With Capecitabine and Temozolomide Chemotherapy Combination in a Patient With Nelson's Syndrome: A Case Report. Front Endocrinol (Lausanne). 2021 Nov 11;12:731631. doi: 10.3389/fendo.2021.731631. PMID: 34858324; PMCID: PMC8632214.