Cancer Chemother Pharmacol (1991) 28: 231–232
0344570491000 93C

Cancer Chemotherapy and Pharmacology

Short communication

Single-dose i.v. dexamethasone – an effective anti-emetic in cancer chemotherapy

Huw Parry and Kim Martin

Department of Clinical Haematology and Oncology, District Hospital, Bangor, Gwynedd LL57 2PW, Wales, U.K.

Received 23 August 1990/Accepted 14 January 1991

Summary. We conducted a randomised, single-blind, placebo-controlled crossover study to assess the efficacy of a single i.v. dose of 20 mg dexamethasone as an anti-emetic in 31 patients receiving cancer chemotherapy. Patients receiving dexamethasone experienced significantly less nausea and vomiting ($P<0.001$ and $P<0.01$, respectively), and appetite and activity were normal in a majority of the treated group. Side effects were insignificant. We conclude that single-dose dexamethasone given i.v. at a dose of 20 mg is a safe and effective anti-emetic for patients receiving cancer chemotherapy excluding cisplatin.

Introduction

Nausea and vomiting are the major subjective side effects of cancer chemotherapy, and in some patients the symptoms may be severe enough to prevent compliance with potentially curative treatment [2]. Unfortunately, complete anti-emetic control is often unsuccessful, which is reflected in the wide range of agents and regimens in current use [6].

We carried out a single-blind, placebo-controlled study to assess the efficacy of a single i.v. dose of dexamethasone in suppressing nausea and vomiting in patients receiving emetogenic combination chemotherapy regimens excluding cisplatin.

Patients and methods

A total of 31 patients who were receiving out-patient cytotoxic chemotherapy at our institution were enrolled in the study. Each subject was studied over two consecutive courses of moderately emetogenic combination chemotherapy with regimens including i.v. Adriamycin, daunorubicin, cyclophosphamide, etoposide and 5-fluorouracil given for a range of solid tumours and haematological malignancies. Patients who had previously received cytotoxic treatment or who had suffered nausea or vomiting during the preceding 24 h were not included in the study. The protocol was approved by the Hospital Ethical Committee and written informed consent was obtained from all participants.

We used a randomised, single-blind crossover design in which each patient served as his or her own control. During two consecutive courses of identical chemotherapy, the patients received either a single i.v. dose of 20 mg dexamethasone in a volume of 5 ml or a 5-ml i.v. injection of 0.9% saline given immediately prior to the cytotoxic treatment. Whether dexamethasone or saline was given first was randomly determined.

The efficacy of the treatment was evaluated by a questionnaire that was completed by the patients at 24 and 48 h after therapy. Subjects were asked to record the duration of nausea and its severity on a visual analogue scale (0 = no nausea; 10 = worst nausea imaginable). Vomiting was graded by the number of emetic episodes. The patients' appetite and normal daily activity were recorded according to the following scale: appetite – 1 = increased, 2 = normal, 3 = reduced, 4 = inability to eat; activity – 1 = normal, 2 = some interference, 3 = considerable interference, 4 = bedridden. Data were analysed using Student's two-tailed *t*-test (paired data) for visual analogue scores and McNemar's test for other parameters.

Results

In all, 27 patients completed the study, including 17 men and 15 women whose age ranged between 20 and 75 years (median, 44 years); 4 subjects were not evaluable because treatment was discontinued in 3 cases and 1 moved away from the area.

Significantly less nausea was recorded at 24 and 48 h by patients receiving dexamethasone ($P<0.001$ and $P<0.01$, respectively; Table 1). Furthermore, 63% of the treated group experienced no vomiting as compared with 37% of the placebo group ($P<0.01$; Table 2). Moreover, 74% of the treated group reported normal activity and 63% registered normal or increased appetite as compared with 33% and 30%, respectively, of the placebo group. The only adverse side effect associated with dexamethasone was transient pruritus that occurred immediately after administration of the drug and lasted for only a few seconds. We found that this could be prevented by slow administration of the dexamethasone over 3–5 min.

Offprint requests to: Huw Parry

Table 1. Episodes of nausea experienced among 27 patients treated with dexamethasone or placebo

Treatment	0–24 h	24–48 h
Dexamethasone	16±28	9±21
Placebo	43±35	21±27

Visual analogue scores (mean ±SD)

Table 2. Emetic episodes experienced among 27 patients treated with dexamethasone or placebo

		Placebo		
		Present	Absent	
Dexamethasone	Present	6	1	7 (26%)
	Absent	11	9	20 (74%)
		16 (63%)	10 (37%)	

Discussion

The multiplicity of anti-emetic regimens in current use for the alleviation of chemotherapy-induced nausea and vomiting testify to the difficulty in achieving complete emetic control. Furthermore, significant side effects have been reported in association with commonly used agents such as metoclopramide, domperidone, chlorpromazine and cannabinoids [1, 5]. The administration of dexamethasone in multiple doses or in combination has previously been advocated as an alternative, although its mode of action remains uncertain [1, 4].

We demonstrated that a single i.v. dose of 20 mg dexamethasone is a safe and effective anti-emetic in patients receiving commonly used emetogenic cytotoxic agents. This approach appears to be free of significant adverse effects if the injection is given over 3–5 min immediately prior to chemotherapy and has become the standard anti-emetic regimen used in our department in patients receiving non-cisplatin anti-cancer therapy.

Since the completion of this study, the new 5-hydroxytryptamine (5-HT_3) receptor antagonist ondansetron [3] has become available, and further investigation of this new agent alone and in combination with dexamethasone is in progress.

Acknowledgements. We wish to thank Merc Sharp & Dohme Ltd. for supporting this study and Mr. J. Cottrell, Senior Clinical Research Officer, for helping with protocol design and data analysis.

References

1. Allan SG, Cornbleet MA, Warrington PS, Golland IM, Leonard RCF, Smyth JF (1984) Dexamethasone and high dose metoclopramide: efficacy in controlling cisplatin induced nausea and vomiting. Br Med J 289: 878–879
2. Laszlo J (1983) Nausea and vomiting as major complications of cancer chemotherapy. Drugs 25 [Suppl 1]: 107
3. Luigi X, Hoffmann IS, Fuenmayor NT, Finn AI (1990) Efficacy of ondansetron (GR 38032F) and the role of serotonin in cisplatin-induced nausea and vomiting. N Engl J Med 322: 810–816
4. Markman M, Sheilder MS, Etinger DS, Shirley MD, Quaskey A, Mellits DE (1984) Anti-emetic efficacy of dexamethasone. N Engl J Med 311: 549–552
5. Roussak JB, Carey P, Parry H (1984) Cardiac arrest after treatment with intravenous domperidone. Br Med J 289: 1579
6. Trounce JR (1983) Anti-emetics and cytotoxic drugs. Br Med J 286: 327–328