

PERINEAL PAIN AND DISCOMFORT: A STRANGE PHENOMENON FOLLOWING INTRAVENOUS DEXAMETHASONE

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Received: 20 October 2023, Revised and Accepted: 12 December 2023

ABSTRACT

Objectives: The objectives of this study were to estimate the incidence of perineal discomfort, to assess the type of perineal discomfort, and to determine the time frame in which the discomfort started and persisted following IV administration of Dexamethasone in patients in the wards of a tertiary care teaching hospital.

Methods: This study was a descriptive cross-sectional study among 235 inpatients of a tertiary care hospital in Kerala receiving IV Dexamethasone. Study setting was in-patient wards of Government Medical College, Manjeri, Kerala. The study duration was 6 months from the date of IEC approval.

Results: Out of the 235 patients enrolled to the study, 126 (55.6%) were male and 109 (44.4%) were female. The mean age of the patients enrolled was 55.85±16.657. About 63 (26.8%) patients developed abnormal discomfort or symptoms following IV Dexamethasone injection. Patients presented the symptoms mainly over perineal area, perianal area, and lower abdomen. About 50 (79.4%) presented with symptoms in perineal area. All the 63 (100%) patients who experienced the symptoms had sudden and spontaneous onset of symptoms while administering the injection and the duration of the symptoms varied from few seconds to 5 min. There was no significant relationship between gender and dosage with appearance of symptoms.

Conclusion: In clinical practice, health-care professionals should be aware of such transient symptoms of perineal irritation and pruritus followed by IV Dexamethasone. Even though the exact mechanism is not known, this should be kept in mind and proper dilution and slow administration of the dexamethasone should be done to reduce such symptoms.

Keywords: Inpatients, IV (Intravenous), Dexamethasone, Perineal irritation.

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INTRODUCTION

Glucocorticoids are one of the most commonly used group of drugs to reduce inflammation in a range of conditions, including allergic reactions, bronchial asthma, autoimmune disorders, inflammatory disorders, cancer chemotherapy, and post-operative and post-chemotherapy nausea and vomiting [1-5]. Dexamethasone which is being in the WHO essential list of medicine and being one of the cheapest medications and freely available is the most commonly used one in such conditions [6]. It was interesting to note that few of our patients while receiving IV Dexamethasone complained of a sudden onset unexplainable discomfort and pruritus like symptoms over the perineal area. Referring back to literature, we could find only few case reports and studies regarding the same [7-16]. The exact pathophysiology of such transient symptoms is still not known. In this background, we decided to conduct a descriptive cross-sectional study among our patients to find out the incidence of such perineal symptoms.

Aim

The aim of this study was to estimate the incidence of perineal/genital pain/discomfort following IV administration of Dexamethasone in patients in the wards of a tertiary care teaching hospital.

Objectives

The objectives of this study were as follows:

1. To determine the form of perineal discomfort experienced by the patients following IV Dexamethasone
2. To determine the time frame in which the discomfort started and persisted following IV Dexamethasone.

METHODS

Study design

This was a descriptive cross-sectional study done in in-patient wards of Government Medical College, Manjeri, Kerala. All patients who were prescribed with IV Dexamethasone and satisfied the inclusion criteria for the study and provide informed consent were enrolled to the study. Patients with h/o hypersensitivity for Dexamethasone or any steroids, patients on analgesics and antihistamines, and patients with acute/chronic pain were excluded from the study. The study was carried out after the approval of IEC. The study duration was for 6 months from the date the of IEC approval (August 07, 2021) or till the date of achieving the sample size.

The sample size of 235 was calculated by taking p value from the previous study done by Singh *et al.*[10] using the formula $n = 4pq/D^2$. All patients who were prescribed with IV Dexamethasone was identified and explained regarding the study and study purpose. Informed consent was taken from the patients satisfying inclusion criteria. The patients were interviewed soon after administration of IV Dexamethasone and the data were entered to the structured pro forma. Details regarding the age, gender, dose of the injection, type of symptoms, area where symptoms occurred, the onset time, and the duration of discomfort were taken. The data entry was done in Microsoft Excel sheet and results were analyzed.

Ethical considerations

The study was done only after obtaining approval from the IEC. Informed consent was taken before enrolment to the study. The study

design being an observational study no invasive procedures were done for the purpose of study. The identity of the patients and the data was kept confidential.

Statistical analysis

Data were entered into Microsoft Excel sheet and were analyzed using the Statistical Package for the Social Sciences (SPSS) version 16 software. Assistance from biostatistics expert was taken for data analysis. Descriptive statistics such as frequency, percentage, and mean and standard deviations were used for analysis. Chi-square test and independent sample t-test were used to find the statistical significance. $p < 0.05$ was taken as statistically significant.

RESULTS

I. Age-wise distribution

Patients enrolled into the study were divided into five groups. The intervals are shown in Table 1. Out of the 235 patients enrolled, 46% belonged to age group above 60. The other age intervals had a patient distribution from 10.2% to 19.1%. The Mean \pm SD of age was 55.85 ± 16.657 .

II. Gender-wise distribution

Out of 235 enrolled patients, 126 (55.6%) were male and 109 (44.4%) were female. There was no significant difference between males and females regarding the average number of drugs per prescription. Results are detailed in Table 2.

III: Incidence of symptoms following IV dexamethasone

Sixty-three (26.8%) patients had various symptoms over perineal, perianal, and other nearby areas following Dexamethasone IV injection. One hundred and seventy-two (73.2%) of patients were comfortable and did not develop any abnormal sensation or discomfort following injection. Results are shown in Table 3.

IV: Type of symptoms

The patients who presented with symptoms had different type of symptoms such as pain, pruritus, discomfort, and other symptoms. Out of the 63 patients with symptoms, 40 (63.5%) patients presented with pruritus. Thirty (47.6%) patients presented with an unexplainable discomfort. Four (6.3%) patients presented with pain and 2 (3.2%) patients presented with other symptoms (Table 4).

V: Area where the symptoms appeared

Patients had the symptoms mainly over perineal area, perianal area, and lower abdomen. Fifty (79.4%) presented with symptoms in perineal area. Sixteen (25.4%) patients symptoms in perianal area and 7 (11.1%) had symptoms over lower abdomen (Table 5).

Onset and duration of symptoms

All the 63 (100%) patients who experienced the symptoms had sudden and spontaneous onset of symptoms while administering the injection. The duration of the symptoms varied from few seconds to 5 min (Table 6).

Relation with dosage of dexamethasone and appearance of symptoms

The dosage administered for the enrolled patients varied from 4 mg to 16 mg. we also compared and assessed whether there was any dose relation with patients presenting with symptoms but there was no statistically significant difference in relation with dosage and appearance of symptoms. The details are provided in Table 7.

Relation with gender and appearance of symptoms

We also compared whether there was any relationship between gender and appearance of symptoms. When analyzed, there was no statistically significant relationship between gender and appearance of symptoms. The details are provided in Table 8.

Table 1: Age-wise distribution

Age group	Frequency	Percentage
20-30	24	10.2
30-40	24	10.2
40-50	34	14.5
50-60	45	19.1
>60	108	46.0
Total	235	100.0

Mean \pm SD of age= 55.85 ± 16.657

Table 2: Gender-wise distribution

Gender	Frequency	Percentage
Male	126	53.6
Female	109	46.4
Total	235	100.0

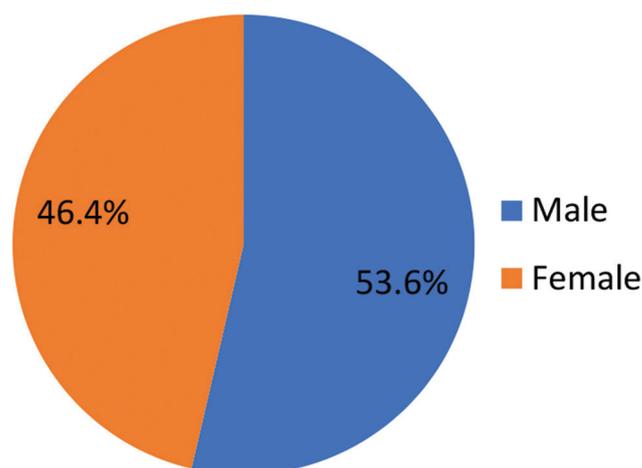


Table 3: Incidence of symptoms following IV dexamethasone

Symptoms	Frequency	Percentage
Yes	63	26.8
No	172	73.2
Total	235	100.0

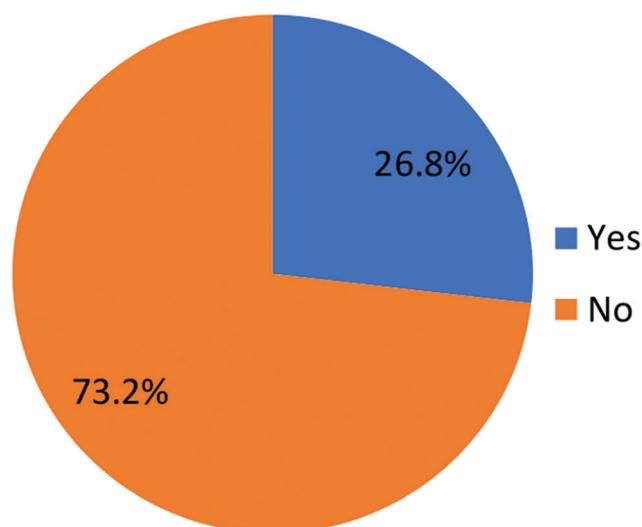


Table 4: Type of symptoms

Type of symptom	Frequency (n=63)	Percentage
Pain	4	6.3
Pruritus	40	63.5
Discomfort	30	47.6
Others	2	3.2

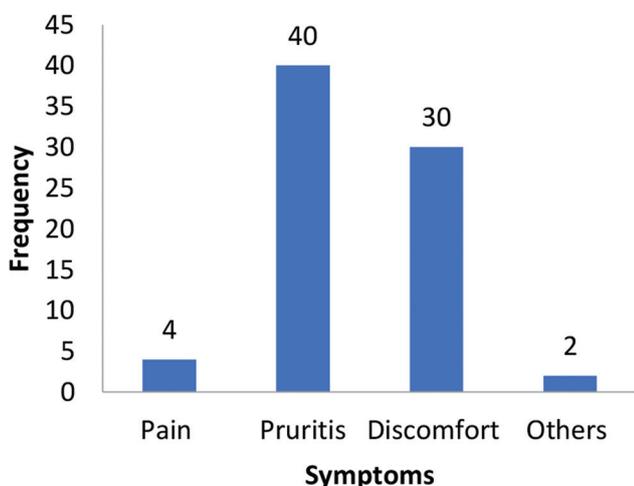
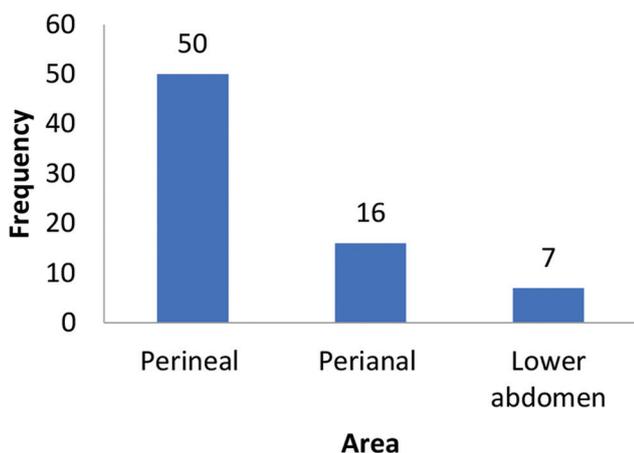


Table 5: Area of symptoms

Area	Frequency (n=63)	Percentage
Perineal	50	79.4
Perianal	16	25.4
Lower abdomen	7	11.1



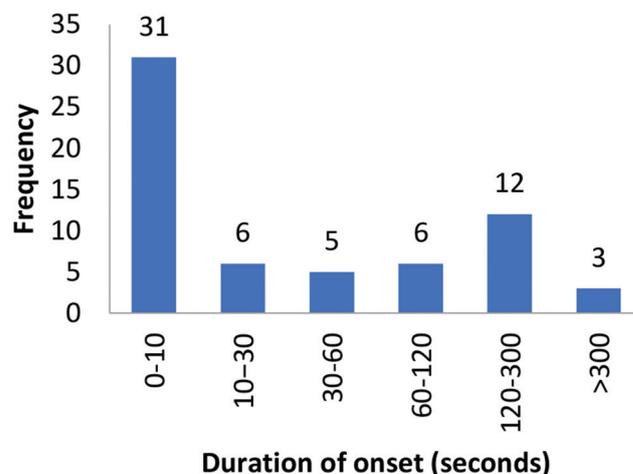
DISCUSSION

Dexamethasone is one of the most common and cheapest corticosteroid used in daily treatment of various conditions. Dexamethasone-induced perineal discomfort and pruritus was reported by patients in out in patients wards.

In our study, 235 patients were enrolled out of which 126 (55.6%) were male and 109 (44.4%) were female. It was 38 (46.9%) males and 43 (53.1%) females in the study done by Bindra et al.[13] and 30 (50%) males and 30 (50%) females each in study done by Singh et al. [10].

Table 6: Onset and duration of symptoms

Duration of symptoms (seconds)	Frequency	Percentage
0-10	31	49.2
10-30	6	9.5
30-60	5	7.9
60-120	6	9.5
120-300	12	19.0
>300	3	4.8
Total	63	100.0



Sixty-three (26.8%) patients presented with symptoms and 172 (73.2%) of patients were comfortable following Dexamethasone IV injection. Thirty-one (49.2%) males and 32 (50.8%) of females had symptoms in our study but was not statistically significant. Only 4 (6.3%) patients experienced pain and 40 (63.5%) patients experienced pruritus. In case of Singh et al. [10], 30% male patients had suffered pain as compared to 56% female patients and perineal pruritus incidence was similar in both groups (16.7% vs. 23.3%). The incidence of pruritus was statistically significant in case of the study done by Singh et al. [10]. In the study done by Bindra et al.[13], 13 (35%) males and 35 (82%) females experienced perineal pruritus and the results were statistically significant. Thirty-seven (37%) of males and 57 (57%) of females experienced pain and 36 (36%) males and 48 (48%) females experienced pruritus in a study one by Lokesh et al.[16].

The onset of reaction was sudden at the time of administration itself and which lasted from 10 s to 5 min in our study. The duration of symptoms lasted for around 60-90 s in case of Bindra et al. [13]. The duration of pain was between 19 and 22 s in case of study done by Lokesh et al.[16]. The onset of symptoms was between 8 and 9 s and duration of symptoms was between 23 and 29 s in case of Singh et al. [10].

The pathophysiology of this strange phenomenon is not exactly known. In most of the studies [7,11], the patients developed the symptoms while administering Dexamethasone itself. It was attributed to the presence of phosphate esters which resulted in such kind of an adverse reaction [7,11]. Even we could not find out the exact reason behind it. Most of the authors concluded the study with recommendation that Dexamethasone should be diluted in 50 mL saline and must be administered in 5-10 min [7,10]. Even though most of the patients easily tolerated such symptoms it's better to be keen in proper dilution and slow administration of drugs to avoid such adverse drug reactions.

Recommendations

This study was conducted with a sample size of 235 patients. Even though a good number of patients complained of such transient perineal

Table 7: Relation with dosage and appearance of symptoms

Dose (mg)	Symptoms		Total (%)	Chi-square value	p-value
	Yes (%)	No (%)			
<4 mg	29 (46.0)	66 (38.4)	95 (40.4)	1.24	0.570
4–8 mg	33 (52.4)	103 (59.9)	136 (57.9)		
>8 mg	1 (1.6)	3 (1.7)	4 (1.7)		
Total	63 (100)	172 (100)	235 (100)		

p-value was calculated by Chi-square test, p<0.05 considered as statistically significant

Table 8: Relation with gender and appearance of symptoms

Gender	Symptoms		Total (%)	Chi-square value	p-value
	Yes (%)	No (%)			
Male	31 (49.2)	95 (55.2)	126 (53.6)	0.673	0.412
Female	32 (50.8)	77 (44.8)	109 (46.4)		
Total	63 (100)	172 (100)	235 (100)		

p-value was calculated by Chi-square test, p<0.05 considered as statistically significant

symptoms, statistically significant differences were not there. A larger sample size should be included to establish more accurate, substantial, and statistical analysis of result on the correlation of the symptoms of perineal itching and pain in relation with age, gender, and dosage which can be done later.

CONCLUSION

In clinical practice, health-care professionals should be aware of such transient symptoms of perineal irritation and pruritus followed by IV Dexamethasone. Even though the exact mechanism is not known, this should be kept in mind and proper dilution and slow administration of the dexamethasone should be done to reduce such symptoms.

ACKNOWLEDGMENT

We extend our sincere thanks to all the participants, house surgeons and postgraduates, the Institutional Ethics Committee, statistics expert, and the hospital administrators for their support.

AUTHORS' CONTRIBUTIONS

Dr. Sindhu CB: Protocol preparation, data collection, data analysis, manuscript preparation, editing, and review. Dr. Abdul Aslam P: Protocol preparation, manuscript preparation, editing, review, and correspondence. Dr. Sandhya George: Data collection, data analysis and manuscript editing, and review.

CONFLICTS OF INTEREST

Nil by authors.

AUTHORS FUNDING

No external funding. All expenses were taken care of by the all author's.

REFERENCES

1. Alangari AA. Corticosteroids in the treatment of acute asthma. *Ann Thorac Med.* 2014;9(4):187-92. doi: 10.4103/1817-1737.140120.

- PMID:25276236
- Henzi I, Walder B, Tramèr MR. Dexamethasone for the prevention of postoperative nausea and vomiting: A quantitative systematic review. *Anesth Analg.* 2000;90:186-94.
 - Sheikh A. Glucocorticosteroids for the treatment and prevention of anaphylaxis. *Curr Opin Allergy Clin Immunol.* 2013;13(3):263-7. doi: 10.1097/ACI.0b013e32836097f4. PMID:23507835
 - Quon BS, Gan WQ, Sin DD. Contemporary management of acute exacerbations of COPD: A systematic review and metaanalysis. *Chest.* 2008;133(3):756-66. doi: 10.1378/chest.07-1207. PMID:18321904
 - Choo KJ, Simons E, Sheikh A. Glucocorticoids for the treatment of anaphylaxis: Cochrane systematic review. *Allergy.* 2010;65(10):1205-11. doi: 10.1111/j.1398-9995.2010.02424.x. PMID:20584003
 - World Health Organisation. World Health Organisation Model List of Essential Medicines, 21st List. Geneva: WHO; 2019.
 - Perron G, Dolbec P, Germain J, Béchard P. Perineal pruritus after i.v. Dexamethasone administration. *Can J Anaesth.* 2003;50:749-50.
 - Thomas V. More on dexamethasone-induced perineal irritation. *N Engl J Med.* 1986;314:1643-4.
 - Ajmal M, Carey M. Intravenous bolus injection of dexamethasone and transient excruciating perineal pain. *Eur J Anaesthesiol.* 2015;32(1):67-8.
 - Singh M, Sharma CS, Rautela RS, Taneja A. Intravenous dexamethasone causes perineal pain and pruritus. *J Anesth Clin Res.* 2011;S1:1-3.
 - Neff SP, Stapelberg F, Warmington A. Excruciating perineal pain after intravenous dexamethasone. *Anaesth Intensive Care.* 2002;30(3):370-71.
 - Crandell JT. Perineal pruritus after the administration of iv dexamethasone. *Can J Anaesth.* 2004;5:398; author reply 398-9.
 - Bindra S, Annavarjula V, Tyro D. Dexamethasone induced perineal pruritus in patients undergoing minor oral surgical procedures-a prospective cohort study. *J Clin Diagn Res.* 2022;16(1):ZC18-21.
 - Dowd N, Nizam A. Intravenous dexamethasone induced-perineal irritation. *Br J Anaesth.* 2008;100(eLetters Supplement):101. doi: 10.1093/bja/el_3504
 - Taleb N, Geahchan N, Ghosn M, Brihi E, Sacre P. Vulvar pruritus after high-dose dexamethasone. *Eur J Cancer Clin Oncol.* 1998;24:495.
 - Lokesh U, Jannu A, Bhattacharya D. Excruciating pain and itching occurring at the administration site after intravenous injection of dexamethasone-a prospective clinical study. *IOSR J Pharm Biol Sci.* 2014 May-Jun;9(3):13-4.