A LOOK AT CHARACTERISTICS OF BENZODIAZEPINES INDUCED PHOTOSENSITIVITY

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INTRODUCTION

- Benzodiazepines (BZD) are a commonly prescribed class of psychotropics (Often indicated for anxiety and sleep disorders).
- BZD are not a well-known cause of photosensitivity as review articles and textbooks do not consistently list benzodiazepines as a causative factor of photosensitivity.[1, 2]
- Cutaneous photosensitivity reactions occur when drugs, taken systemically or applied topically, increase sensitivity to ultraviolet (UV) rays from the sun and other light sources.[1]
  - Exogenous substances absorb photons, and move from the ground state to reactive state.[1, 3] The structure of the exogenous substances controls the wavelength (UVA or UVB) that is absorbed.
- Considering the common use of benzodiazepines and the limited literature on benzodiazepine-induced photosensitivity available to date, we sought to review the literature and identify all cases of benzodiazepine-induced photosensitivity.

OBJECTIVES

- Evaluate baseline characteristics of patients who got BZDs induced photosensitivity reactions.
- Identify specific drugs in BZDs class which cause photosensitivity reactions.
- Identify characteristics of BZDs drugs which lead to photosensitivity responses in susceptible patients.

METHODS

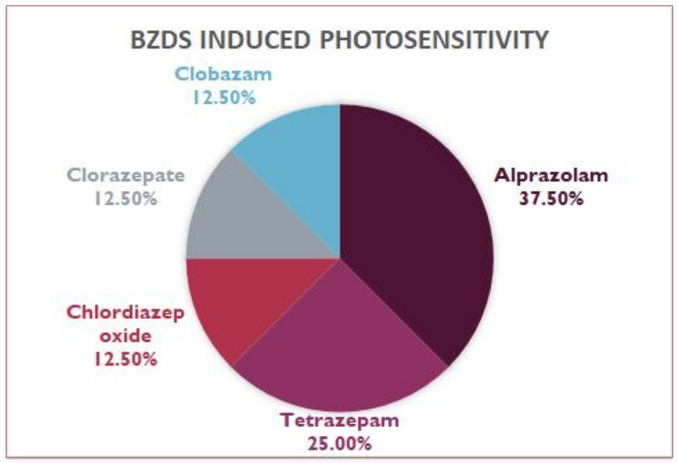
- A literature search was conducted initially on PubMed to include any benzodiazepine and photosensitivity reaction reported case reports.
- Utilizing PubMed's "MeSH" search feature and CINAHL, in which the major terms, "Benzodiazepine/Photosensitivity" and "Photosensitivity disorders/chemically induced" were searched.
- We continued the search on Micromedex and Google Scholar to identify additional case reports.
- We identified total of 8 case reports of BZDs induced photosensitivity reactions.

RESULTS

Demographics (n = 8)	
Average age	46.3 ± 17.4 years
Gender	
Female	4 (50%)
Male	3 (37.5%)
Unidentified	1 (12.5%)

Benzodiazepines Photosensitivity Results (n = 8)	
Time to Photosensitivity Reaction	
1-3 days	3 (37.5%)
3-7 days	0 (0.0%)
7-14 days	2 (25.0%)
>14 days	2 (25.0%)
Unknown	1 (12.5%)
Time to Photosensitivity Resolution* - *days* (n=6)	7 (2-37.5)
Time to Photosensitivity Resolution	
< 1 Week	3 (37.5%)
1 - 2 Weeks	2 (25.0%)
3 Months	1 (12.5%)
Unknown	2 (25.0%)
Rechallenge Test	
Positive	6 (75.0%)
Negative	1 (12.5%)
Unknown	1 (12.5%)

*Reported as median (IQR)
*Classified by available data from articles



DISCUSSION/CONCLUSION

- Drugs that cause photosensitivity are lipophilic, allowing the drug to accumulate in the skin and absorb ultraviolet (UV) or visible radiation. Photosensitizing drugs were said to usually have a low molecular weight (200 to 500 Daltons) which was in range with those BZDs in our case reports.[1]
- In addition to a low molecular weight, photosensitizing structures are usually on a same plane and have polycyclic figurations with heteroatoms.[1] Those criteria match with BZDs drugs in the case reports which made them more susceptible to photosensitivity reactions.
- BZDs induced photosensitivity is not a drug class effect. In one case report, the patient was taking diazepam and tetrazepam, despite chemical similarities between tetrazepam and diazepam, the patient experienced photosensitivity only to tetrazepam through oral photochallenge and photopatch test. This may have been due to tetrazepam's increased lipophilicity. Higher Log P values indicate the drug is more lipophilic. Tetrazepam has a higher Log P value at 3.2, as opposed to diazepam's Log P value of 2.82.[1]
- Benzodiazepine-induced phototoxicity may be underrecognized and underreported due to:
  - BZDs are often taken as needed.
  - As discontinuation resolves rash, testing may not be commonly done in clinical practice to confirm the actual cause.
- Pharmacists should consider counseling patients about the risk of photosensitivity and the need to avoid excessive sun exposure - even in darker-skin patients as photosensitivity reactions may lead to hospitalization and temporarily decrease their quality of life.[4]

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DISCLOSURE

All authors have nothing to disclose.