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A CASE REPORT ON ALBENDAZOLE INDUCED HEPATITIS AND ALOPECIA

Medicine

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ABSTRACT

Albendazole is a newer benzimidazole carbamate that is used worldwide, primarily against a variety of intestinal and tissue nematodes but also against larval forms of certain cestodes. As to the latter, albendazole has become the choice for treating cysticercosis and the drug of choice for cystic hydatid disease.Albendazole is used as a typical antiparasitic agent worldwide. The side effects of albendazole may include nausea, vomiting, abdominal pain, dizziness, headache, alopecia, and increased liver enzymes. Mild elevation of the liver enzyme has been reported in more than 10% of cases, but drug induced liver injury with alopecia was reported to be very rare.In light of this, we present a case report featuring a 39-year-old woman who subsequently received the drug Albendazole, presented with hepatitis, and alopecia.

KEYWORDS

Albendazole, Adverse Drug Reaction, Hepatitis, Alopecia

INTRODUCTION

Albendazole is a FDA-approved medication, developed over 46 years ago. It is thought to act by binding to parasite □-tubulin, inhibiting its polymerization and impairing glucose uptake. Albendazole induces the enzymes of the cytochrome P450 system responsible for its metabolism.On oral administration of a 400 mg dose; the absorption of albendazole sulphoxide is notably low. Peak plasma levels typically range from 0.04 to 0.55 mg/L, exhibiting considerable variability among individuals.[3]The absorption of albendazole is enhanced by a meal high in fat, with around 70% protein binding. Abendazole sulphoxide has a half-life of 9h. With administering doses of 10 mg/kg/day, the concentration of the active drug within hydatid cysts typically falls between 0.52 to 1.61 mg/L.For effective treatment of hydatid disease, tissue concentrations exceeding 0.5 mg/L are necessary to achieve therapeutic efficacy.[4][5]The most common adverse effects accompanying albendazole use are headaches and elevated liver enzymes, with 10% to 20% of patients experiencing elevated liver enzymes.[6][7] Some other side effects of albendazole include abdominal pain, nausea, vomiting, and fever There are reports of alopecia and telogen effluvium in the literature as rare side effects of albendazole therapy.[7]

Figure 1: Alopecia
Sources:Patient

Case Study

A 39-year-old female visited a clinic on 14/12/2023 with complaints of lower back pain persisting for many years, aggravated over the last 1 month, along with fever and cold for the past week. During the physical examination, the patient's vitals were recorded as follows: Temperature: 98.8°F, BP: 130/90 mmHg, P/A: soft with firm hepatomegaly. The patient was advised to undergo CECT abdomen and pelvis, Urine culture sensitivity, and Serum Protein Electrophoresis. The patient returned with the reports on 19/12/2023, and was diagnosed with Hypergammaglobulinemia, UTI, and Hepatic Hydatid Cyst. Treatment included Tab. Nitrofurantoin 100mg for 5 days BD for UTI and a referral to a surgeonfor further management of the Hepatic Hydatid Cyst. On 20/12/2023, the patient visited hospital OPD (surgery) with complaints of right hypochondrium pain on and off. USG abdomen and pelvis revealed a hydatid cyst of the liver, confirming the diagnosis. The patient was prescribed with Tab.Albendazole 400 mg BD for 3 months and advised to return for a review after 2 months.

The patient returned to surgery OPD on 14/02/2023 with similar complaints. She had been taking Tab. Albendazole 400 mg BD for the past 2 months and had developed jaundice in January, which subsided without medication. LFTs, USG abdomen and pelvis, and MRCP were advised, with a follow-up scheduled after reviewing the reports. On 15/02/2024, the patient returned to OPD, for showing reports, which indicated the presence of a large cystic lesion with multiple daughter cysts on USG. MRCP showed an exophytic large cyst with multiple internal daughter cysts, pushing the right kidney inferiorly. The patient was advised to consult a gastroenterologist due to abnormal LFTs.On the same day, the patient consulted the gastroenterologist with similar complaints and revealed the habit of ethanol consumption for past 9 years, stopped before 2 months.

Table 1: Diagnostic Laboratories Values

Date	14.12.23	14.02.24	19.02.24	01.03.24	04.03.24	07.03.24	11.03.24	19.03.24	26.03.24	Units
SGOT	78	200	97	53	51	62	26	131	48	U/L
SGPT	72	304	104	38	36	35	18	83	31	U/L
AP	174	181	150	155	176	119	136	370	N/A	U/L
T.BILI	0.78	2.70	2.47	1.32	1.04	1.58	1.12	0.92	N/A	mg/dL
GGT	228	486	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U/L

Tests for HIV and HBV were negative, but LFT levels were abnormal:Bilirubin-Total:2.70mg/dl, SGOT: 200U/L, SGPT: 304U/L, ALK. Phosphatase: 181U/L. Treatment included Tab. Vitamin E 400 mg OD, Tab. Ursodeoxycholic Acid 300mg BD for 5 days, and additional tests for Gamma GT, Prothrombin Time/INR, and LFTs on 19/02/2024. The patient was advised to discontinue Tab. Albendazole.

On 19/02/2024, the patient returned to the gastroenterologist's OPD to show reports. Gamma GT was elevated to 486U/L,and was diagnosed as Albendazole-induced hepatitis and alopecia, and treatment

included same medicines for 10 days, with repeat LFTs after 10 days. Surgical intervention was recommended.

On 04/03/2024, the patient visited surgery OPD for surgical intervention and was advised admission for the procedure. Pre-operative tests including LFTs, CBCs, Serum Electrolytes, B.U.N. and Serum Creatinine were ordered, and the patient was counseled about the LAP/OPEN surgery with the possibility of spillage and recurrence of the Hydatid Cyst. The surgery planned was LAP/OPEN Enucleation of Hydatid Cyst +/- Marsupialization. The patient was also advised for Pre-Anesthetic Checkup (PAC).

The patient was admitted on 05/03/24 with similar complaint and hair loss since past 3 months. During the physical examination at admission, the patient's vitals were as follows: PR-83 bpm, BP-120/80 mmHg, GRBS-165 mg/dl, SPO2-98%, P/A-soft, non-tender.

On 06/03/24, the patient underwent LAPAROSCOPIC HYDATID CYST ENUCLEATION + PARTIAL EXCISION OF CYST WALL UNDER GA. Findings included a large hydatid with multiple daughter cysts present. The patient tolerated the procedure well and received post-operative care including IV fluids, antibiotics (CEFOPERAZONE + SULBACTAM), analgesics (TRAMADOL 50mg, PARACETAMOL 650 mg), and other supportive measures. On POD-1, she experienced a fall in saturation, tachycardia, and a fever spike, for which she received appropriate treatment as advised by the physician. She was started on incentive spirometry, nebulizations, and Inj. Enoxaparin 40mg. On POD-3, as there was nil drain output, the drain was removed. On POD-5, a gastro opinion was sought for the biopsy report, which confirmed the presence of a Hydatid Cyst Liver. Treatment included restarting Tab. Albendazole 400mg BD, followed by RFTs and LFTs after 1 week.She improved symptomatically and was discharged in a stable condition with the following advice: Tab. Albendazole 400mg BD to continue, Syp. Sucrafil 10ml TID for 1week, Syp. [Ambroxol (30mg/5ml) + Levosalbutamol (1mg/5ml) + Guaifenesin (50mg/5ml)], Cap. [Domperidone (30mg) + Esomeprazole (40mg)]. She was advised to review with LFTs reports in the Gastro and Surgery OPD after 1 week.

On 20/03/24, patient's elevated LFTs noted (SGOT: 131U/L, SGPT: 83U/L, ALK. Phosphatase: 370U/L). On same day, Gastroenterologist advised stopping Tab. Albendazole, rechecking LFTs in 1 week before starting Praziquantel.

On 26/03/24, at gastro OPD follow-up, LFTs decreased (SGOT: 48U/L, SGPT: 31U/L) and was prescribed with Tab. Praziquantel 600mg TID for 14 days after LFT normalization.Also advised to monitor LFTs within 7 days post-medication. Dermatologist consult recommended for alopecia.

DISCUSSION

Echinococcus granulosus infection is initially asymptomatic and may remain so for many years. Its subsequent clinical features and complications depend on the size of the cyst(s) and their location. The liver and lungs are affected in approximately 67 % and 25 % of cases, respectively. Most patients experience single-organ involvement, and a single cyst is present in more than 70 % of cases. Enlarged cysts can cause hepatomegaly, with or without right upper quadrant pain, nausea, and vomiting. Approximately 20 % of patients with lung cysts also have liver cysts [9].

Albendazole is a benzimidazole derivative, especially used in the treatment of hydatid cysts and many other parasitoses. The most common side effects of the drug are mild to moderate elevations (15.6%) in liver enzymes, abdominal pain, nausea or vomiting, and headache. Albendazole-induced side effects such as alopecia and cytopenia are rare and reversible, providing that treatment is interrupted [8].

In order to assess the potential link between the drug and the adverse reaction, a causality assessment was done using Naranjo's algorithm and the WHO scale sanctioned by the Uppsala Monitoring Centre. This analysis yielded a score of 9, indicating a high probability of the adverse reaction being associated with the drug and according to the WHO-UMC scale, the adverse reaction was classified as a Definite ADR.Re-challenge was performed which again confirmed the adverse drug reaction.This ADR was then reported to the Pharmacovigilance Programme of India (PvPI) through the spontaneous reporting system, contributing to the expansion of the knowledge base.

CONCLUSION

Physicians should be aware of this rare and potentially fatal adverse effect of albendazole.The use of albendazole in the treatment of parasitic infections requires close monitoring.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Abbreviation

ADR: Adverse Drug Reaction, BD: bis in die (twice daily), BP: Blood Pressure, PR:Pulse Rate, CECT:Contrast Enhanced Computed Tomography, T.BILI:Total Bilirubin, UTI:Urinary Tract Infection, LFTs:Liver Function Tests, CBCs:Complete Blood Counts, BUN: Blood Urea Nitrogen, SGOT:Serum Glutamic-oxaloacetic Transaminase, SGPT: Serum Glutamic Pyruvic Transaminase, GGT: Gamma-glutamyl Transferase, HCV:Hepatitis C Virus, HBV: Hepatitis B Virus, ALK./AP: Alkaline Phosphatase, MRCP: Magnetic Resonance Cholagiopancreatography, Inj:Injection, SYP:Syrup, CAP: Capsule, OD:omne in die (once daily), OPD: Out-patient Department, GRBS:General random blood sugar, Tab:Tablet, TID: ter in die (three times a day), UMC: Uppsala Monitoring Center, WBC: White Blood Cells, WHO: World Health Organization.

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Conflict of Interest (COI)

The author declares that there is no real or potential COI regarding the publication of this work.

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