

Co-Trimoxazole for Treatment of Pediculosis Capitis in Iraq

Dr. Arwaa A. Abdul-Hussein¹ Dawood Salman Idan²

¹College of medicine, Al Muthanna University, Samawah, Iraq.

² MBChB, DVD, Al-Hussein teaching hospital, Samawah, Iraq.

Abstract

Background: In Iraq especially during the last decades, there was an increase of (HLI) causing more problems for doctors of Iraq because of medications scarcity which made the families sometimes obliged to use traditional methods like (gasoline, kerosene, head shaving and insecticides) which might cause more problems.

Objective: To use a single effective treatment for pediculosis capitis without the need for combination therapy and at the same time to treat scalp infection associated with HLI.

Material and methods: This study involved 100 patients with HLI. The diagnosis was done by signs, symptoms and clinical examination. All the patients were given oral dose of (TMP/SMX) 10mg/kg twice daily for 3 days repeated after 7days. We asked the patient to come after two weeks for follow up. After the two weeks following up period, the patient was being advised to repeat the same regime for 3 days if the HLI does exist. The successful treatment was defined by the disappearance of adult lice or nits. If the nits do exist alone, it wasn't indicated as a failure of treatment.

Results: After the period of two weeks following up, prosperous treatment was 90% and 10% still had HLI, and they gave the same protocols. At the 3rd week of follow up, successful treatment was 95%.

Conclusion: This study indicates that a TMP/SMX is alternative and effective treatment of head lice. We suggest that the particular management with TMP/SMX can be used alone in the treatment of HLI especially ones associated with secondary infections.

Key words-HLI: Head lice infestation, TMP/SMX: trimethoprim/sulfamethoxazole, PPB: piperonyl butoxide, CoT: Co-Trimoxazole, DHFR: dihydrofolate reductase.

INTRODUCTION

Pediculosis capitis In Iraq especially during the period between 1990-2003 was increasing incidence causing more problems for doctors because of medication resistant and forced the families sometimes to use of dangerous substances(kerosene, insecticides, gasoline, and head shaving) causing more problems.

Pediculus humanus capitis (head louse) infests the humans scalp and about six – twelve millions individuals affected annually in the USA [1, 2]. The head louse is widely distribution both in developed and developing countries [3]. Scalp pruritus and secondary bacterial infection due to scratching are the characteristic clinical presentation of HLI, and concomitant pediculosis capitis must always be considered in cases of scalp impetigo [3]. The arthropod responsible for HLI is *Pediculus humanus var capitis* which is an all over the world health problem which frequently affects the children at the age of school (3-12years) with female predominance [1- 4]. The disease could occur in any seasons, but more common in hotter months. HLI doesn't create an illness, but it's disagreeable and had a social shame [3].

Traditionally, permethrin cream and lotion was the medication of choice for treatment of pediculosis due to the long lasting remaining effect of which, that is necessary for annihilating the nymphs [4]. Though, medication resistance for permethrin and other pediculicidal agents such as pyrethrins beside lindane, has also been reported [3, 5, and 6]. Dermatologists, health care staff and pediatricians nowadays face other strategies to defeat the medication resistance that developed by HLI. For that reason experimental medications were begun to be used, included TMP/SMX, carbaryl, 5% permethrin, malathion and ivermectin to manage HLI [4, 5, 6, 7, and 8]. From all these treatment, TMP/SMX is frequently used in pediatric age group and it is familiar to be used comparing with malathion, 5% permethrin, carbaryl and ivermectin [2, 8]. Dihydrofolic acid is converted to tetrahydrofolic acid by the action of the enzyme DHFR. This is a paramount gait for the synthesis of DNA of bacteria throughout purine. This enzyme could work following the competitive blocking of sulfonamides to the para aminobenzoic acid from being converted to dihydrofolic acid by the aid of the enzyme dihydrofolate synthetase [9-14].

Until about 1980, TMP was available for medical use in combination with SMX in form of capsules or tablets; each form

contains eighty mg TMP and four hundreds mg SMX. Double strength forms of the medication; tablets or capsule could available and they contain TMP / SMX as one hundred and sixty / eight hundreds mg. The usual adult dosage is 1 or 2 double strength tablets or capsules given every 12 hours after the meal [7]. Due to the synergistic effect of cotrimoxazole, the trimethoprim and sulfamethoxazole are offered in combination form. As the bacterial resistance towards sulfonamides has increased, their significance has declined and they had to be replaced by antibacterial medication with greater activity and little toxicity.

MATERIAL AND METHODS

A total number of one hundred patients aged 5-68 years with mean age of ± 15.6 years, 82 females and 18 males with various degree of severity of pediculosis capitis were encountered in this therapeutic study which is done in the outpatient clinic department of dermatology at Al-Hussein teaching hospital in Al-Samawah government and the private clinic in a period from October 1999 to May 2017. All patients were asked about their age, occupation, socio-economic state, address, duration of infestation, source of the disease, family history and number of infested persons in the family. History of sulphur allergy or other medications and history of G6pd, and history of pregnancy for married females.

The diagnosis depend on the clinical features and examination like Itching, scratching, lice, nits, lymph nodes enlargement, also examined the patient for any sign of scalp infection specially on post auricular and occipital area. The presence of various stages of lice were also noticed. Participants were informed to take SMX/TMP (tablet or suspension) 10mg/kg/days in two divided doses for 3 consecutive days repeated after 7days also for 3 days. Children could swallow tablets were given one tablet twice daily. For adults, one tablet of double strength was given for a period of three days as twice per day. We instruct the parents or the patients themselves to use shampoo regularly, nits removal by the use of very fine teathed comb, also we asked for combing the hair for many time as they could throughout the treatment course. All patient and their families were given particular information about preventive methods of reinfestation (good personal hygiene, cleaning of the bedding and other fomites as well as treatment of associated family members). All patients were reexamined the

scalp and hair after 2 and 3 weeks of the course of treatment. Treatment failure was considered if we noticed different parasite forms like nymphs, nits or alive adults but not the existence of merely nits. For visits of following up, a magnifying lens was used to certify whilst a real developing egg or an ardent egg do exist to ensure HLI. If the participants after two weeks still complain HLI, then we repeated the same protocol TMP/SMX tablets or suspension but for three days only. The patients were reexamined three weeks after the eminence treatment. Those who didn't return for the follow up visit, we removed them from the study.

RESULTS

Over an 18-year period from 1999 to 2017; 100 patients had completed the study, after exclusion some patients who had hypersensitivity to TMP/SMX or developed skin rash during the course of treatment.

Table and figure 1 showed sex distribution of 100 patients and the result found that most of cases were females in a percent of 82% while males 18%. Table 2 showed age group distribution, there were found that most common infestation occur in age group 1-10 years in both males and females 13%, 47% respectively, followed by aged group 11-20 years and the frequency decrease as the patients became older.

Table 3 and figure 2 showed the source of infection with head louse and it appear that school contact is the most common source followed by home, neighbors and unknown sources in decreasing frequency.

Table 4 reveal the duration of illness which ranged from 1 week- 1 year with a duration of one month was the most common (26%). In table 5 and figure 3 the clinical presentations of patients were recorded and included in decreasing frequency: itching, nits, lice, scratching, infection, lymph node enlargement and finally pityriasis amiantacia.

Table 6 and figure 4 showed the response rate to the course of treatment by TMP/SMX and follow up period. After two weeks from beginning of therapy, the success rate of treatment was 90% and HLI was still appear in 10 patients. After 3d week of the follow up, failure to response were present in 5 patients. The rate of improvement of head lice at the 3 week follow up was 95%.

Table (1) The sex distribution of 100 patients with Ped. capitis

Sex	No.	%
Females	82	82%
Males	18	18%

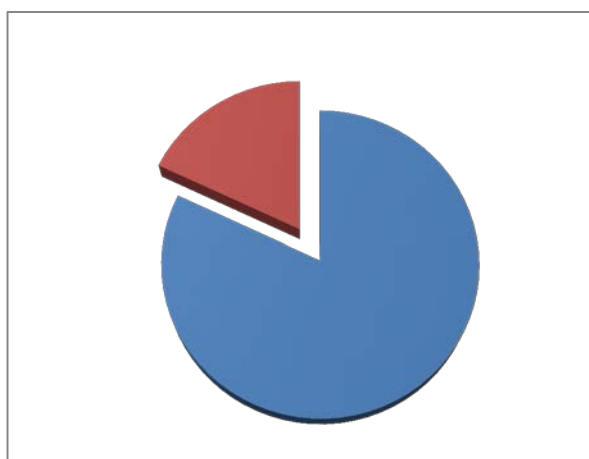


Figure (1) The sex distribution of 100 patients with Ped. capitis

Table (2) Age group distribution of Ped. capitis.

Age	No.	Males	%	females	%
1-10	60	13	13%	47	47%
11-20	21	3	3%	18	18%
21-30	4	1	1%	3	3%
31-40	3	0	0%	3	3%
41-50	9	1	1%	8	8%
51-60	2	0	0%	2	2%
61-70	1	0	0%	1	1%
Total	100	18	18%	82	82%

Table (3) Sources of pediculosis Capitis.

Source type	Males	females	Total
School	8	46	54
Home	2	21	23
Neighbors	3	6	9
Unknown	5	9	14

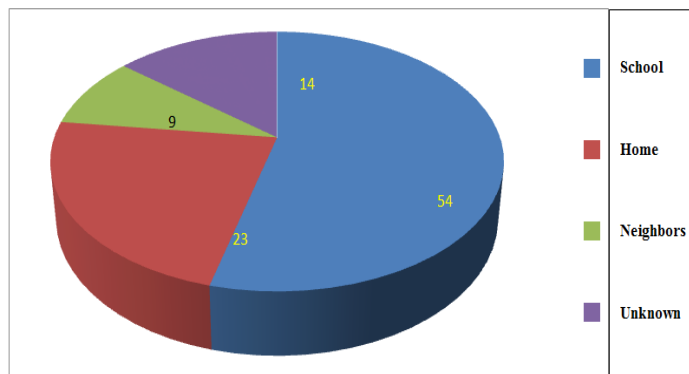


Figure (2) Sources of Pediculosis capitis

Table (4) Duration of the disease.

No. patients	Duration of illness
Four	one week
Six	two weeks
Thirteen	three weeks
Twenty six	one month
Twenty	two months
Twelve	three months
Six	four months
Two	five months
Seven	six months
Four	one year

Table (5) The clinical features of pediculosiscapitis

Clinical feature	No. of patients	%
Itching	96	96%
Scratching	93	93%
Lice	94	94%
Nits	98	98%
Infection	86	86%
L.nodes enlargement	71	71%
Eczema	5	5%
Pit. Amiantacia	2	2%

Table (6) The response to treatment during follow up

No. of patients treated by TMPX	Total No. of patients	No. of patients respond	% of patients respond	No. of patients not respond	% of patients not respond
1st Flow up	100	90	90%	10	10%
2nd Flow up (for patients not respond)	10	5	50%	5	50%

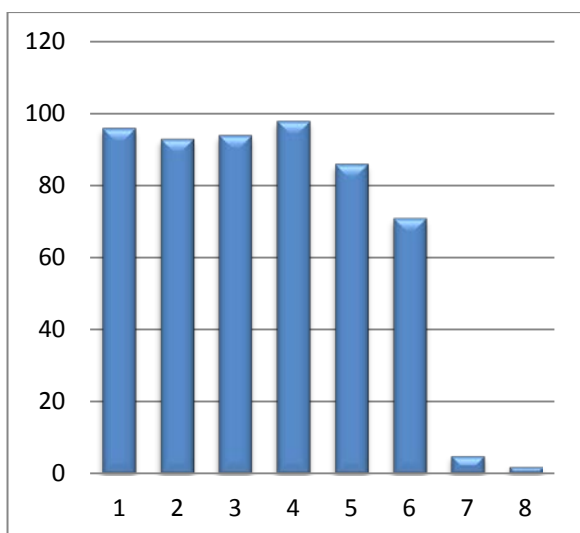


Figure (3) The clinical features of pediculosis capitis
 1. Itching 2. Scratching 3. Lice 4. Nits 5. Infection 6. L.nodes Enlargement 7. Eczema 8. Pit. Amiantacia 8.

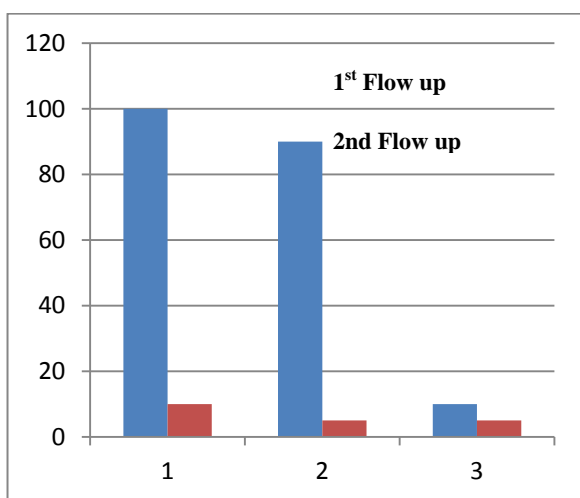


Figure (4):The response to treatment during follow up

1. Total No. of patients
2. No. of patients respond
3. No. of patients not respond

DISCUSSION

Management of pediculosis capitis has been a long standing problems because development of resistance to the currently available antipediculosis medications [3, 6]. Increasing possibility of Infestation to other members of a family could be due to the resistance towards medications [4, 7]. HLI may cause a bad social impression on the patient and his family [1]. Because of resistance of head lice to medications, alternative and dangerous agents for management of HLI (like head shaving, insecticides, gasoline and kerosene) might be offered. In our study we found this medication

was suitable for patients with HLI with secondary bacterial infection more than others medications, as single treatment. Our study suggests an alternative method for treatment of HLI where medications failure or resistance were present or there were secondary infections. Nobody ever appears to have suggested any systematic therapy for lice[9].In 1978 Shashindran et al showed that TMP/SMX by mouth killed adults Lice on the patients taking it for respiratory tract infections[11, 9].The mechanism of action of TMP/SMX against lice is by killing the symbiotic bacteria of the parasite [9, 11] .

TMP/SMX destroys lice by interfere with intestinal flora when the lice ingest blood as well as of TMP/SMX from treated patients [14]. Campose *et al* in 1981 also they found curing of HLI by TMP/SMX[12].The effective dose of TMP/SMX even one daily dose for three days repeated in ten days [11]. The TMP/SMX interfere with the bacterial flora in the lice gut that responsible for synthesis vitamins B, thereby lice unable to obtain vitamins B and it will die as a consequence. Different antibiotics can be offered experimentally in the management of HLI, but still require to be studied by additional researchers. So far, TMP/SMX is the only antibiotic that had been used as therapeutic trial for HLI. Shashindran and his colleagues was accidentally discovered that TMP/SMX as a treatment for head lice in 1978[11]. These physicians had used TMP/ SMX to a twelve year old girl with upper respiratory tract infection and scalp lice, and they observe a simultaneous improve in the girl`s pediculosis capitis. They depended in the study they had accomplished on the use of separate two courses of 10 days of TMP / SMX (twice a day single tablet for three successive days).

They discovered that this course of treatment could cure the infestation without demanding any extra pediculicidal medications. A study was done by [10, 9]to find out the effectiveness of TMP/ SMX as a treatment for HLI. They showed that the lice established decreased movement and subsequent death at the 4th-7th day of oral administration of TMP/SMX. The side effects record in that research comprised nausea, vomiting, skin eruption and severe pruritis. In our study none of our patients on TMP/ SMX developed such complication, although mild pruritis was noticed in some participants and they needed just antihistamines. We propose that oral dose of TMP/SMX might yield their definitive suppression of HLI. Furthermore, after a complete course of TMP/SMX, we supposed that the levels of this medication in the blood may bestow prevention against new eminent lice that sucks scalp blood.

Beyond the use of TMP/SMX; other medication that could be chosen in the treatment of HLI comprising permethrin 5%,Malathion, ivermectin and carbaryl. Permethrin 5%and malathion was concomitant with medication resistance or re-infestation and demand repeated courses. Other medication had serious side effect like the carcinogenicity of carbaryl and neurotoxicity of ivermectin. The new topical agent comprises spinosad (insecticide that could be got from Saccharopolyspora spinose fermentation) whose action mechanism is exerted by causing a neural hyper excitation [1].For definitive treatment of HLI with pyoderma of scalp TMP/SMX can be used effectively. Special groups of patients like handicapped, low intelligence, isolated elderly people, prisoners, captive soldiers at war or winter time and adult males, they refused topical treatment due to

embarrassment, for them we can give TMP/SMX. It is available, cheap and easy to use. Two to four tablets every day for 3 days, repeated after 7 days is all we need.

CONCLUSION

Our findings in this study indicate that a TMP/SMX is an efficient, alternative, cheap and available and less resistant medication for treatment of HLI and we recommend that the single therapy of oral TMP/SMX can be taken alone in the management of HLI especially ones associated with secondary scalp skin infections.

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