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Research Article

Awareness of Idiopathic Intracranial Hypertension among Patients Taking Isotretinoin

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Abstract

Introduction: Isotretinoin, a potent acne treatment, has notable side effects, including depression and teratogenicity. Idiopathic Intracranial Hypertension (IIH), characterized by elevated intracranial pressure, has been linked to isotretinoin. This study explores the awareness of IIH among isotretinoin users in Saudi Arabia, addressing a crucial healthcare concern.

Methodology: It is a cross-sectional study conducted in Saudi Arabia using a self-administered questionnaire shared via social media and in dermatology clinics. Data is cleaned in excel and analyzed in IBM SPSS 29.

Results: Our study included 420 Isotretinoin users, primarily females (76.9%), aged 18-25 (64.3%), from Eastern (29.5%) and Western (26.7%) regions, with high school (49.3%) and university graduates (46.7%). All used Isotretinoin for acne treatment, with varied usage durations. Some used additional medications like Vit. A (Retinol) (23.1%). Notably, only 26.7% were aware of Idiopathic Intracranial Hypertension (IIH), and 18.1% believed Isotretinoin increased IIH risk. Educational level significantly impacted IIH awareness ($p<0.001$), while age, gender, and regional factors had less impact. Acne presence did not notably affect IIH awareness.

Conclusion: Our study emphasizes the necessity of enhancing Idiopathic Intracranial Hypertension (IIH) awareness among Isotretinoin users. Despite some sociodemographic influences on awareness, there is a pervasive lack that requires targeted education for safer medication use and improved patient outcomes.

Introduction

Isotretinoin, or 13-cis retinoic acid, is an oral capsule of retinoid and vitamin A derivative. It was first synthesized in 1955 and has been available in markets since 1982 [1,2]. Isotretinoin is by far the most prescribed medication to treat moderate to severe acne vulgaris [3]. Despite being generally effective, isotretinoin can cause numerous side effects, a few of which are severe, these include mucocutaneous adverse effects in which there will be lips, skin, and eyes dryness. Psychiatric adverse effects can also occur and there have been reports of depression and suicide among patients treated with Isotretinoin [1]. Isotretinoin is also known to be a potent teratogen. Headache is also a common complaint and is usually benign in nature. However, in patients taking isotretinoin it might indicate a serious underlying condition such as Idiopathic Intracranial hypertension (IIH) [1,2].

Idiopathic Intracranial Hypertension (IIH), formerly known as pseudotumor cerebri, is a condition where there is an increase in intracranial pressure with no obvious cause; it commonly happens in obese women during their childbearing period [4-6]. Symptoms include a new onset of nonspecific headache that is often atypical; usually frontal in location, worsens when lying down, and exacerbates on waking up in the morning. Another symptom is blurry vision, these two are the most reported symptoms, others may have pulsatile tinnitus and sixth nerve palsy manifested as abduction deficit of the ipsilateral eye. Nevertheless, papilloedema is considered as the major clinical sign [7,8]. Therefore, the fear of developing severe and permanent visual loss should be taken into consideration. The only abnormality found in Cerebrospinal Fluid (CSF) analysis is a high lumbar puncture opening pressure. Thus, the diagnosis of IIH is made by exclusion. Studies have shown that Cerebral Venous Sinus Thrombosis (CVST) increases Intracranial pressure (ICP) and causes papilledema. Thus, performing MRV is essential to rule out underlying cerebral venous sinus thrombosis [9].

The exact mechanism of how isotretinoin causes IIH is unknown. However, it is suggested that high doses of isotretinoin have an influence on the amount of CSF and may interfere with the lipid composition of the arachnoid villi, leading to disruptions in the regular transport system and preventing the absorption of CSF by the arachnoid villi [10,11]. Most of the published literatures focuses on the risk of developing IIH among patients taking isotretinoin. In this study, we aim to assess the awareness of IIH and the risk of vision loss among patients using isotretinoin.

Study Methodology

Study design

A cross-sectional study was conducted by gathering the information by using a self-administered structured questionnaire. The questionnaire is belt on Google Forms and shared through social media such as Whatsapp and Telegram to reach the maximum number of participants. Also, patients were interviewed in dermatology clinic to participate in the study.

Participation in the study was voluntary.

Study area and duration

a) The study took place in Saudi Arabia
b) It was conducted in 9-month duration from December 2022 – September 2023

Study population

a) The target population of the study is adult male and female patients on isotretinoin.

Sample selection

Inclusion criteria:

a) Males and Females were included
b) Age >15 years old and <55 years old
c) Isotretinoin users

Exclusion criteria:

a) Participants who don't/didn't expose to isotretinoin
b) Age <15 years old and >55 years old
c) Previous diagnosis of hydrocephalus or other causes of raised intracranial pressure.

Sample size

The sample size (n) was calculated using the following equation. The margin error € is 5% which equals 0.05. The confidence level (Zα/2) is 95% which equals 1.96. The P value was calculated to be 0.87.

Sample size will be 385 based on formula:

$$N = n = \frac{p(p-1)\left(Z_{\frac{\alpha}{2}}\right)^2}{(E)^2}$$

E= 0.05; Z= 1.96; P=0.50

Study Procedure

Data collection

Age, gender, dose of the drugs, side effects awareness.

Data Analysis

The data were analyzed by SPSS. The identity of the patients was anonymous.

Statistical analysis

All statistical data were analyzed using PSPP system. Descriptive statistics are presented using counts and proportions (%). Bivariate analysis was performed to identify independent factors associated with increased knowledge regarding Idiopathic Intracranial Hypertension among patients taking Isotretinoin.

Results

Our study included 420 patients. Out of which, most participants were females (76.9%), with the majority aged 18-25 years (64.3%). Educationally, a significant portion were high school graduates (49.3%), followed closely by university graduates (46.7%). There was limited representation in lower education categories (Table 1).

Table 1: Sociodemographic of all patients who were assessed for Intracranial HTN in Isotretinoin using patients.

		Frequency (n=420)	Percent
Gender	Female	323	76.9
	Male	97	23.1
Age	<18 Years	25	6
	18-25 Years	270	64.3
	26-35 Years	88	21
	36-45 Years	22	5.2
	> 45 Years	15	3.6
Educational Status	Non-Literate	4	1
	Primary School Graduate	4	1
	Secondary School Graduate	9	2.1
	High School Graduate	207	49.3
	University Graduate	196	46.7

Table 2: Prevalence of Isotretinoin usage & other features among patients.

		Frequency (n=420)	Percent
Do you have Acne	No	76	18.1
	Yes	344	81.9
Use Isotretinoin for Acne	Yes	420	100
Duration of Usage	<15 Weeks	137	32.6
	15-20 Weeks	106	25.2
	>20 Weeks	177	42.1
Use Other Medications besides Isotretinoin	No	331	78.8
	Yes	89	21.2

Table 2 shows the prevalence of Isotretinoin usage and related features. The majority (81.9%) had acne, and all patients (100%) used Isotretinoin for acne treatment. Duration of usage varied, with 32.6% using it for <15 weeks, 25.2% for 15 - 20 weeks, and 42.1% for >20 weeks. A notable 21.2% of patients also used additional medications alongside Isotretinoin, while 78.8% did not.

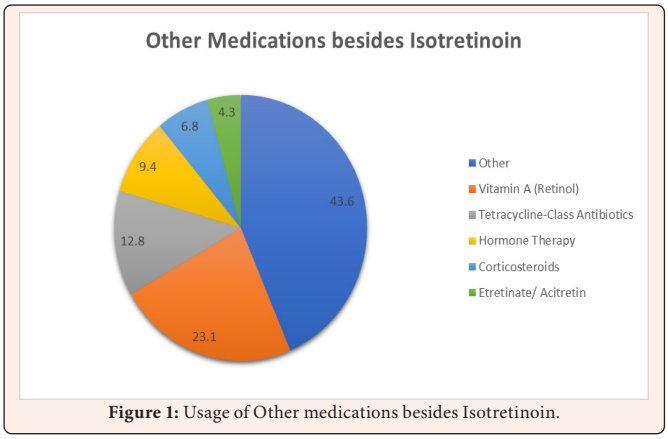

Figure 1: Usage of Other medications besides Isotretinoin.

Figure 1 shows the additional medications used alongside Isotretinoin by patients. The most common medications included Vitamin A (Retinol) (23.1%), Tetracycline-Class Antibiotics (12.8%), Hormone Therapy (9.4%), Corticosteroids (6.8%), and Etretinate/Acitretin (4.3%).

Table 3 shows patients' awareness and perceptions regarding Idiopathic Intracranial Hypertension among patients who use Isotretinoin. 73.3% of patients were not aware of Idiopathic Intracranial Hypertension, and 74.5% were not aware Isotretinoin increased Idiopathic Intracranial Hypertension risk, and 72.6% did not know Idiopathic Intracranial Hypertension symptoms. Regarding Idiopathic Intracranial Hypertension-related symptoms, 56.2% did not know it causes headaches, and only 41.4% knew which specialty is responsible in managing Idiopathic Intracranial Hypertension.

Table 3: Prevalence and Awareness about idiopathic Intracranial Hypertension among patients using Isotretinoin

		Frequency (n=420)	Percent
Know about Idiopathic Intracranial HTN	Yes	112	26.7
	No	308	73.3
Using Isotretinoin increases the risk of Intracranial HTN	Agree	76	18.1
	Disagree	31	7.4
	Do not know	313	74.5
Know about the symptoms of Idiopathic Intracranial HTN	Yes	112	26.7
	No	305	72.6
Idiopathic Intracranial HTN causes new onset/worsening headaches	Agree	166	39.5
	Disagree	18	4.3
	Do not know	236	56.2
Idiopathic Intracranial HTN causes vision loss/ disturbance	Agree	162	38.6
	Disagree	20	4.8
	Do not know	238	56.7
Idiopathic Intracranial HTN causes pulsatile Tinnitus which is worse on Lying down	Agree	129	30.7
	Disagree	38	9
	Do not know	253	60.2
Specialty responsible in Managing Idiopathic Intracranial HTN	Yes	174	41.4
	No	246	58.6
Need to see a neurologist/ ophthalmologist, as soon as possible in case of decreased vision, headache, or transient visual obscuration while using Isotretinoin	Agree	257	61.2
	Disagree	31	7.4
	Do not know	132	31.4

Table 4 shows the relationship between various sociodemographic factors and the awareness of Idiopathic Intracranial Hypertension among Isotretinoin users. Age group of 18-25 years showing relatively higher Idiopathic Intracranial Hypertension awareness compared to other age groups but non - significant (p=0.117). Gender differences did not significantly impact Idiopathic Intracranial Hypertension awareness (p=0.720). However, educational level played a significant role, with high school and university graduates having better Idiopathic Intracranial Hypertension awareness, while illiterate individuals exhibited poorer awareness (p<0.001). Having acne did not notably affect Idiopathic Intracranial Hypertension awareness.

Table 4: Association of different sociodemographic features with the awareness of patients about Intracranial HTN among isotretinoin-using Patients.

		Awareness of Idiopathic Intracranial Hypertension Among Patients Taking Isotretinoin		Sig. Value
		Poor Awareness	High Awareness	
Age	<18 Years	17	8	0.117
	18-25 Years	160	110	
	26-35 Years	56	32	
	36-45 Years	17	5	
	>45 Years	13	2	
Gender	Female	204	119	0.72
	Male	59	38	
Educational Level	Not Literate	0	4	0.003
	Primary School Graduate	4	0	
	Secondary School Graduate	8	1	
	High School Graduate	120	87	
	University Graduate	131	65	
Having Acne	No	52	24	0.248
	Yes	211	133	

Discussion

Isotretinoin, one of the important acne treatments, has multiple side effects of which Idiopathic Intracranial Hypertension (IIH) could result in disabling complication like irreversible vision loss. Our study explores IIH awareness among Isotretinoin users, a commonly prescribed medication for acne. Our study's sociodemographic analysis shows a predominance of female participants (76.9%), in line with existing medical literature indicating a higher prevalence of acne among women. This finding reinforces the known gender-related patterns in acne occurrence [12]. Most patients fell within the younger age group of 18-25 years (64.3%), which aligns with the typical age of acne onset. This finding reinforces the known age-related patterns in acne occurrence [12,13].

One of the key observations was that significant portion of patients taking isotretinoin are not aware about serious side effects like IIH that could lead vision loss. This underscores the crucial requirement for comprehensive patient education regarding potential side effects and associated risks. Duration of Isotretinoin usage varied, with 42.1% of patients using it for more than 20 weeks. This prolonged usage duration is noteworthy, as it is often associated with a higher risk of adverse effects, including IIH. Therefore, patients on extended Isotretinoin regimens should be closely monitored and educated about IIH symptoms [11]. A substantial proportion of patients (21.2%) reported using other medications alongside Isotretinoin. The most common additional medication was Vitamin A (Retinol) (23.1%), as previous studies showed that Retinoids were approved for acne [14]. Thus, the potential interactions and cumulative effects of these medications can be serious especially if the patients receiving those medications are not aware about IIH and the risk of irreversible vision loss.

Our study exposed a significant lack of awareness about Idiopathic Intracranial Hypertension (IIH) among Isotretinoin users. Just 26.7% knew about IIH, and only 18.1% believed Isotretinoin increased IIH risk. This highlights the urgency of patient education on IIH, especially for Isotretinoin users. Knowledge of IIH-related symptoms was also limited, with only 26.7% of patients recognizing these symptoms. While other studies show the higher awareness (63%) of Isotretinoin users about its side effects [15]. Thus, early detection and intervention are crucial in preventing IIH-related complications. Before prescribing Isotretinoin, healthcare providers should emphasize the importance of recognizing IIH symptoms and promptly seeking medical attention when experiencing them. It is discouraging that 58.6% of participants, almost half, were not aware to who to seek medical advice and which specialty is responsible for managing IIH. This suggests that a significant portion of patients will have delay in their treatment in case they develop IHH which may result in unfavorable complications like vision loss. The influence of sociodemographic factors on IIH awareness is obvious. Age appeared to have some influence, with the 18-25 age group showing relatively higher IIH awareness compared to other age groups. Gender differences did not significantly impact IIH awareness, indicating that IIH awareness is relatively consistent across these factors.

Perhaps the most significant finding was the strong association between educational level and IIH awareness. High school and university graduates exhibited better IIH awareness, while illiterate individuals had significantly poorer awareness [16]. This underscores the critical role of education in raising awareness about IIH and its potential risks associated with Isotretinoin use. Healthcare providers should prioritize educational interventions, especially for patients with lower educational backgrounds. Healthcare providers must address IIH awareness gaps in Isotretinoin users through inclusive educational programs, prioritizing those with lower education levels. Emphasis on early symptom recognition like headaches and vision issues is crucial for effective management. There are several limitations of this study, which include potential selection bias as participants were likely self-selected, limiting generalizability. Self-reported data might introduce recall bias. The study's cross-sectional design limits causal inferences, and the survey may not capture all relevant sociodemographic factors influencing IIH awareness.

Conclusion

Our study highlights the need for improved awareness of Idiopathic Intracranial Hypertension (IIH) among Isotretinoin users. While some sociodemographic factors, such as age and educational level, appear to influence IIH awareness, there is a significant lack of awareness that needs to be addressed through targeted educational interventions. By enhancing patient education and promoting awareness of IIH and its associated risks, healthcare providers can contribute to a safer use of Isotretinoin and better outcomes for patients.

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