

On the Necessity of Prevalence Studies on Circumscribed Choroidal Hemangioma in Iraq

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Abstract:

Background: Circumscribed choroidal hemangioma (CCH), a rare benign tumor, poses significant risks to vision due to its proximity to the macula, with epidemiology varying from one population to another.

Objectives: The present article emphasizes the need for prevalence studies on CCH in Iraq.

Methods: In June 2023, a literature review was conducted on PubMed, followed by a secondary analysis of patients' demographic data from diverse populations and ethnic groups worldwide.

Results: The secondary literature analysis revealed demographic variations in CCH, including age and gender (male-to-female) ratios, and across different populations. The exact prevalence remains unclear, particularly in Iraq, due to limited data and asymptomatic cases. Accurate diagnosis through imaging techniques is crucial for symptomatic cases, with treatment modalities like PDT available. Economic challenges persist in Iraq, highlighting the need for collaboration between healthcare and government sectors.

Conclusion: The lack of CCH prevalence studies in Iraq impedes understanding and management, impacting ophthalmology care for Iraqi patients. Addressing this gap through research can benefit local healthcare authorities and provide essential data for the Middle East and other regions worldwide.

Keywords: Choroidal tumors; epidemiology; posterior uveal tract; prevalence studies; retinal detachment; Sturge-Weber syndrome; syndromic associations; vascular hamartoma.

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Introduction:

Choroidal hemangioma, an uncommon benign hamartoma, can severely impact visual acuity and necessitates immediate attention to better understand its prevalence, demographics, and associated implications. The tumor occurs in two primary forms: circumscribed and diffuse, with the circumscribed variant (CCH) being the prevalent subtype and typically identified in middle-aged adults, yet these hemangiomas have also been detected across diverse age groups, including young adults (Figure 1). Although benign, the proximity of CCH to the macula can lead to leakage of serous fluid into the sub-retinal space, resulting in vision impairment and even retinal detachment. While some CCHs remain asymptomatic, others can be associated with Sturge-Weber syndrome or closed-angle glaucoma, further complicating their management. Distinguishing CCH from choroidal melanoma is also challenging due to the similar clinical presentation [1,2].

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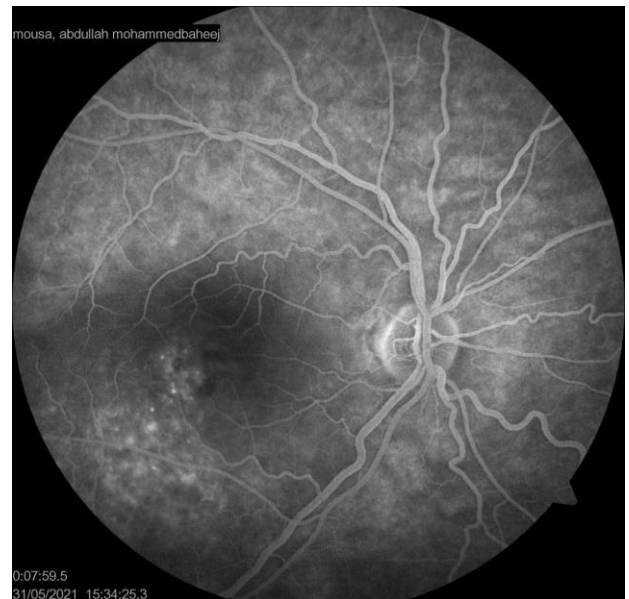


Figure 1. Fluorescein angiography capturing the tumor in a young Iraqi male.

Despite its clinical importance, the prevalence of CCH remains ambiguous and unmapped, especially

within the Iraqi population. Incidence variation across different populations has been observed [2]. Further, the understanding of the risk factors associated with tumor development remains constrained, and it is imperative to subject individual cases to a thorough examination employing causality assessment criteria, such as the Bradford Hill criteria, to facilitate a robust secondary analysis of the data [3]. On another note, the incidence estimation is also hindered by the condition's rarity and the potential asymptomatic nature of many cases. At the same time, reports on patients' demographics, including gender predilection, i.e., the male-to-female ratio, have shown conflicting results, underscoring the need for large-scale studies and meta-analyses to infer the demographic characteristics robustly [4-6].

Clinically latent, CCHs can cause many visual disturbances when symptomatic, including hyperopia, visual blurring, and more [1]. Accurate diagnosis is crucial, and various imaging techniques such as ultrasonography, angiography, and optical coherence tomography enhance diagnostic precision. Photodynamic therapy (PDT) has emerged as a primary treatment option, offering effective tumor control while preserving retinal integrity. Verteporfin-based PDT has shown promising outcomes,

particularly in exudative retinal detachment secondary to diffuse choroidal hemangioma [2]. The landscape of therapeutic approaches for CCH is diverse, including other methods like laser photocoagulation, cryotherapy, and radiotherapy. Recent investigations have even explored the potential of non-selective beta-blockers and anti-VEGF agents as adjunctive therapies, expanding the treatment options available [2,5,6].

We reviewed relevant literature, primarily consisting of individual cases (case reports) and collections of cases (case series) related to choroidal hemangioma (Table 1). These reports also provided valuable socio-demographic information, including the age, gender ratio (male-to-female ratio), and ethnicity of the patients involved. In a study by Dalvin et al. (2019), a retrospective analysis was conducted on a group of patients with circumscribed choroidal hemangioma, encompassing 458 cases from 1967 to 2018. Most patients were males (male-to-female ratio=1.43), averaging 51 years (ranging from 3 to 93). Predominantly, the patients were of Caucasian descent (86%), but there were also individuals from other ethnic backgrounds (4% Hispanic, 3% African American, 2% Asian, 1% Indian, <1% Middle Eastern, and 4% others) [7].

Table 1. Summary of studies with the largest cohorts of cases

Study	Date	Region	Study Design	Sample Size	Age	Gender Ratio	Ethnicity	Incidence
Dalvin et al. (2019)	1967-2018	United States	Retrospect.	458	51 [3, 93]	1.43	Caucasians (86%)	Unknown
Shields et al. (2001)	1974-2000	United States	Retrospect.	200	47 [4, 81]	1.35	Caucasians (92%)	Unknown
Krohn et al. (2019)	2002-2017	United States, Norway, India	Retrospect.	113	57 [11, 93]	1.76	Caucasians & Indians	Unknown
Jarrett et al. (1976)	1976	-	Case series	27	-	-	-	Unknown
Liu et al. (2018)	2002-2013	China	Retrospect.	22	46.6 [16, 65]	1.2	Chinese	Unknown
Naseripour et al. (2018)	2006-2014	Iran	Retrospect.	21	41.7 [8, 81]	20	-	Unknown

Age represents the average [range].

Another noteworthy study by Shields et al. (2001) examined the second-largest collection of CCH cases, totaling 200 cases, gathered from a single center in the United States from 1974 to 2000. The findings revealed a similar age distribution (mean=47 years; range: 4-81 years) and a comparable male-to-female ratio (1.35) to Dalvin et al.'s study (2019). Similarly, the patient population represented diverse ethnicities (92% Caucasians, 4% Hispanics, 3% African Americans, and nearly 2% Asians) [8]. In a multinational study by Krohn et al. (2019), the third largest cohort of CCH cases, numbering 113, was examined. The average age of these patients was

slightly higher at 57 years (ranging from 11 to 93), and the male-to-female ratio was also elevated at 1.76. The former study collected cases from the United States, Norway, and India from 2002 to 2017 [9].

Jarrett et al. (1976) analyzed another cohort of 27 CCH cases. These patients underwent photocoagulation as a treatment approach for serous macular detachment secondary to hemangioma. Impressively, 81.48% of the treated cases experienced resolution of their condition [10]. In a 2018 study conducted in China by Liu and colleagues, 22 cases of circumscribed choroidal hemangioma were discussed. These cases were admitted to a single-center hospital

in China between 2002 and 2013. The average age was 46.6 years (ranging from 16 to 65), with a male-to-female ratio of 1.2 [11]. Naseripour and coauthors (2018) analyzed a comparable cohort of 21 CCH patients from Iran. Most of these patients were in their early fifth decade, averaging 41.7 years (ranging from 8 to 81). Notably, the male-to-female ratio was considerably high, at 20:1 [12].

The economic ramifications of circumscribed choroidal hemangioma in Iraq are exacerbated by the lack of epidemiological data, a multitude of differential diagnoses (amelanotic choroidal melanoma, choroidal osteoma, choroidal nevus, metastasis to the choroid, choroidal granuloma, and others), the absence of efficacious treatment protocols, a scarcity of specialized ophthalmic medical facilities, and hence, the necessity of sending patients abroad for management, notably to countries like Turkey. The resulting uncertainty in healthcare planning and resource allocation leads to inefficiencies, while the absence of standardized management and specialized centers places a heightened financial burden on individuals and the healthcare system [13,14].

On another note, the need for medical treatment abroad further compounds economic strain, diverting vital healthcare funds from the domestic economy. Addressing these economic challenges demands comprehensive prevalence studies, the development of local expertise and infrastructure, and the establishment of specialized facilities, all of which would collectively alleviate the economic burdens associated with this condition.

Given the scarce data specific to the Iraqi population, it is imperative to conduct comprehensive prevalence studies to shed light on Iraq's epidemiological landscape of CCH. Such studies could offer vital demographic insights, enhancing diagnostic and therapeutic strategies tailored for the local population, aligning with precision medicine, and potentially enabling individualized interventions. Collaborative efforts between ophthalmology centers, research institutions, and governmental health agencies are needed to initiate and support these endeavors.

In conclusion, the dearth of prevalence studies on circumscribed choroidal hemangioma in the Iraqi population restricts the ability to comprehend its impact or the capacity to develop tailored or personalized management strategies. Addressing this gap through dedicated research can contribute to advancing ophthalmic care and alleviating the burden of visual impairment caused by this condition. As

researchers advocate for improved eye health across diverse populations, prioritizing the investigation of CCH prevalence in Iraq becomes indispensable.

Authors' declaration:

We confirm that all the Figures and Tables in the manuscript belong to the current study.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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Authors contributions:

Study conception & design: (Ahmed Al-Imam, Farah Al-Zahawi, and Ashok Sahai). Literature search: (Ahmed Al-Imam). Data acquisition: (Ahmed Al-Imam). Data analysis & interpretation: (Ahmed Al-Imam). Manuscript preparation: (Ahmed Al-Imam, Farah Al-Zahawi, and Ashok Sahai). Manuscript editing & review: (Ahmed Al-Imam).

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حول ضرورة إجراء دراسات حول مدى انتشار الورم الوعائي المشيمي المحدود في العراق.

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خلاصة

خلفية البحث: يشكل الورم الوعائي المشيمي المحدود، وهو ورم حميد نادر، مخاطر كبيرة على الرؤية بسبب قربيه من منطقة "بقعة" الشبكية، مع اختلاف مدى انتشار هذا الورم من مجموعة سكانية وعرقية إلى أخرى.

الأهداف: يؤكد هذا المقال على ضرورة إجراء دراسات حول مدى انتشار الورم الوعائي المشيمي المحدود في العراق.

الطرق: في يونيو 2023، تم إجراء مراجعة الأدبيات البحثية من خلال قاعدة بيانات PubMed، تلاها التحليل الثانوي للبيانات الديموغرافية للمرضى المصابين بالورم الوعائي المشيمي المحدود من مجموعات سكانية متنوعة وعرقية متنوعة حول العالم.

النتائج: كشف التحليل الثانوي للأدبيات البحثية عن اختلافات ديموغرافية بين المرضى المصابين بالورم، بما في ذلك عمر المرضى ونسب الذكور إلى الإناث، وعبر مجموعات سكانية وعرقية مختلفة. لا يزال مدى الانتشار الوعائي لهذا المرض غير واضح، خاصة في العراق. يعد التشخيص الدقيق من خلال تقنيات التصوير الشعاعي أمرًا بالغ الأهمية، مع توفر طرائق علاجية متعددة كالعلاج الضوئي الديناميكي. على صعيد آخر، لا تزال التحديات الاقتصادية قائمة في العراق، مما يسلط الضوء على الحاجة إلى التعاون بين قطاع الرعاية الصحية ودوائر الدولة ذات الصلة لتذليل العقبات.

الاستنتاج: إن نقص الدراسات عن مدى انتشار الورم الوعائي المشيمي المحدود في العراق يعوق تشخيص وعلاج المرض، مما يؤثر سلبًا على جودة طب العيون للمرضى العراقيين. إن معالجة هذه الفجوة من خلال الأبحاث يمكن أن يفيد سلطات الرعاية الصحية المحلية ويوفر البيانات الأساسية لمنطقة الشرق الأوسط ومناطق أخرى في العالم.

مفتاح الكلمات: أورام الطبقة المشيمية؛ علم الأوبئة؛ دراسات الانتشار؛ انفصال الشبكية؛ متلازمة ستيرج وبيبر؛ مترافقات المتلازمة؛ الورم الوعائي.