

## Reviewing Hydatidosis in Iraqi Papers

Hazim Abdul Rahman Alhiti\*

Head of emergency department, Higher Institute of Health, Al Anbar Directorate of Health.

\*Corresponding Author: Hazim Abdul Rahman Alhiti, Head of emergency department, Higher Institute of Health, Al Anbar Directorate of Health.

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### Abstract

**Background and Aim:** Hydatidosis tells a well-known zoonotic parasitic infection in rural areas This article reviews the Iraqi papers concerning Hydatidosis.

**Methods:** The author searched for the word (hydatid) in the Iraqi website engine: Iraqi Academic Scientific Journals (<https://www.iasj.net>); for the (hydatid+Iraq) on the website engine: Google Scholar (<https://scholar.google.com>) by setting the search (at any time); for the (hydatid+Iraq) on the website engine: World Cat (<https://www.worldcat.org>), set the search (publications) specifying search since the last 25 years; for the (hydatid+Iraq) on the website engine: PubMed (<https://pubmed.ncbi.nlm.nih.gov>) which applied the search automatically since 1946. Accordingly, the authors organized the data in tables and figures using Excel software 2010. Findings: According to the predefined search, 275 papers in (<https://www.iasj.net>) (8.7 %), 2570 papers in (<https://scholar.google.com>) (81.8 %), 217 papers in the (<https://www.worldcat.org>) (6.9 %), 79 papers in (<https://pubmed.ncbi.nlm.nih.gov>) (2.5 %). According to the occupied organs, 79 papers of the liver (18.4 %) and 526 papers of the lung (16.7 %) lowered subsequently. There is a 79-95 % overlap among these academic search engines.

**Conclusion:** Iraqi researchers studied hydatidosis comprehensively and distributed their papers in famous academic engines, Google Scholar is the dominant one.

**Keywords:** review; hydatid disease; hydatidosis; iraq people's iraqi researchers

### Introduction

Hydatidosis or Hydatid disease tells a well-known, disturbing, dangerous, and common zoonotic parasitic infection in rural areas. A larval stage of the *Echinococcus granulosus* tapeworm infected the dogs as the definitive host, while humans, cows, goats, and cattle were the temporary hosts (Fadel S, 2019) Other species, such as *Echinococcus multilocularis*, drive Alveolar echinococcosis stands less common. New species, such as echinococcosis oligarthrus and echinococcosis Vogeli, cause Neotropical echinococcosis (Cenni L, 2023).

*Echinococcus granulosus* stands for a mini tapeworm. Farmers who reside in rural areas are intermediate hosts and could live without symptoms. Physicians discovered hydatid cysts incidentally while searching for a diagnosis for dubious complaints. A hydatid cyst presents as an unhurriedly enlarged mass in the liver or the lung (Pal M, 2022).

The hydatid cyst enlarges over several years to provoke dull pain or mass presentation. The rate of cyst expansion with its location influences its expression. Hydatid cysts affect any organ in the body, but the most commonly encountered sites are the lungs, liver, and spleen. Trivial trauma ruptures the cyst and induces anaphylaxis, which is the fatal presentation of a hydatid cyst (Sulaiman A, 2021).

The physicians suspect a hydatid cyst in a sheep owner from an endemic area (rural area) presented with mass effects. Doctors ordered an ultrasound, CT scan, and MRI to reveal the morphology of the hydatid cyst. The doctor advises serological tests to confirm the parasitic infection (Tartar T, 2020).

There are different strategies for the hydatid cyst, although surgical removal is still the curative remedy. Surgeons applied mini surgeries such as PAIR therapy: percutaneous aspiration, injection of chemicals, and respiration, even puncturing the cyst to supersede surgery, but these are still less effective than curative surgical removal. Physicians utilized different kinds of anthelmintic and chemotherapy drugs in limited cases (Cantay H, 2022). Recurrence of hydatid cysts is common, Physicians advise thorough wash of vegetables and green leaves, encouraging health education on this disease, proper hand washing, limiting home butchery of cattle, avoid contaminated food by fecal matter (Laatamna A, 2020) Hydatidosis is common in Iraqi rural society with an impact on the health of the citizens and government financial burdens (ALhadidi R, 2022) Here I reviewed the Iraqi papers concerning this topic in addition to my experience. This review of this tropical parasitic infection adds to the Iraqi library and enhances Iraqi researchers' focus on this subject.

## Methods

### 2.1 Sample and study design

This review of this tropical parasitic infection adds to the Iraqi library and enhances Iraqi researchers' focus on this subject.

### 2.2 Data Collection

The author searched for the word (hydatid) in the Iraqi Academic Scientific Journals (<https://www.iasj.net>); for the (hydatid+Iraq) on Google Scholar (<https://scholar.google.com>) by setting the search (at any time); for the (hydatid+Iraq) on WorldCat (<https://www.worldcat.org>), set the search (publications) specifying search since the last 25 years; for the (hydatid+Iraq) on PubMed

(<https://pubmed.ncbi.nlm.nih.gov>) which applied the search automatically since 1946. The author organized the data in tables and figures using Excel software 2010.

## Results

According to the predefined search, 275 papers in the (<https://www.iasj.net>)(8.7 %), 2570 papers in the (<https://scholar.google.com>) (81.8 %), 217 papers in the (<https://www.worldcat.org>)(6.9 %), 79 papers in the (<https://pubmed.ncbi.nlm.nih.gov>)(2.5%). According to the occupied organs 579 papers of the liver (18.4 %) and 526 papers of the lung (16.7 %) lowered descendingly. There is a 79-95 % overlap among these academic search engines.

	IASJ	Google Scholar	WorldCat	PubMed	Total
<b>No. of papers</b>	275 (8.7 %)	2,570 (81.8 %)	217 (6.9 %)	79 (2.5 %)	3,141 (100 %)

Table 1: The distribution of academic search engines according to the predefined search

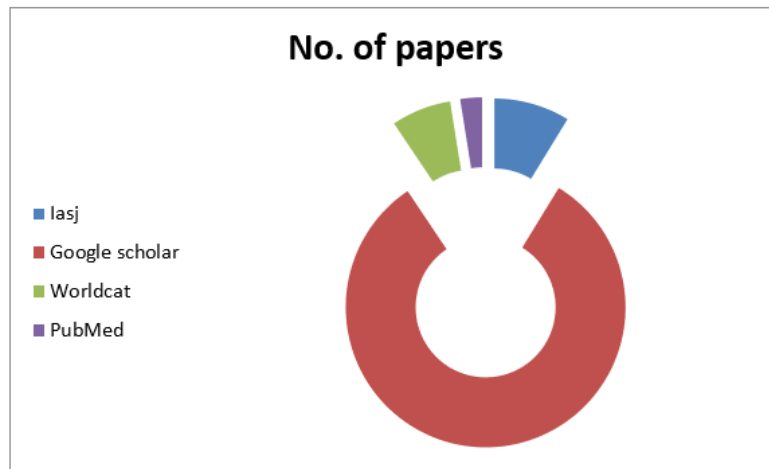
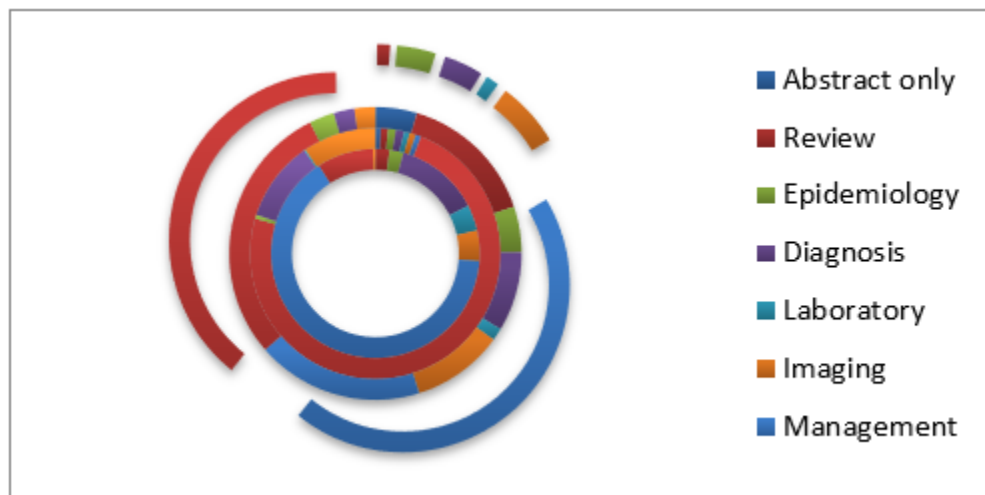


Figure 1: Doughnut chart shows the distribution of academic search engines according to the predefined search.

	IASJ	Google Scholar	WorldCat	PubMed	Total
<b>Abstract only</b>	0 (0 %)	1 (0.5 %)	10 (0.3 %)	0 (0 %)	28 (0.8 %)
<b>Review</b>	6 (0.1 %)	24 (0.6 %)	33 (0.9 %)	1 (0.03 %)	64 (2 %)
<b>Epidemiology</b>	6 (0.1 %)	26 (0.8 %)	11 (0.3 %)	3 (0.09 %)	46 (1.4 %)
<b>Diagnosis</b>	36 (1.1 %)	27 (0.8 %)	19 (0.6 %)	3 (0.09 %)	85 (2.7 %)
<b>Laboratory investigations</b>	11 (0.3 %)	19 (0.6 %)	3 (0.09 %)	1 (0.03 %)	34 (1 %)
<b>Imaging investigations</b>	13 (0.4 %)	21 (0.7 %)	22 (0.7 %)	5 (0.1 %)	61 (1.9 %)
<b>Management</b>	178 (5.6 %)	18 (0.6 %)	40 (1.2 %)	35 (1.1 %)	271 (8.6 %)
<b>Case reports</b>	24 (0.7 %)	1,890 (60 %)	63 (2 %)	31 (0.9 %)	2008 (63.9 %)
<b>Conference</b>	0 (0 %)	13 (0.4 %)	6 (0.1 %)	0 (0 %)	19 (0.6 %)
<b>Books</b>	0 (0 %)	266 (8.4 %)	5 (0.1 %)	0 (0 %)	271 (8.6 %)
<b>Nursing</b>	0 (0 %)	5 (0.1 %)	0 (0 %)	0 (0 %)	5 (0.1 %)
<b>Herbal medicine</b>	1 (0.03 %)	243 (7.7 %)	5 (0.1 %)	0 (0 %)	249 (7.9 %)
<b>Total</b>	275 (8.7 %)	2,570 (81.8 %)	217 (6.9 %)	79 (2.5 %)	3,141 (100 %)

Table 2: The distribution of academic search engines according to the hydatid topic.



**Figure 2:** Doughnut chart shows the distribution of academic search engines according to the hydatid topic.

	IASJ	Google Scholar	World Cat	PubMed	Total
<b>Liver</b>	139 (4.4 %)	350 (11.1 %)	65 (2 %)	25 (0.4 %)	579 (18.4 %)
<b>Lung</b>	59 (1.8 %)	378 (12 %)	74 (2.3 %)	15 (0.4 %)	526 (16.7 %)
<b>Spleen</b>	27 (0.8 %)	286 (9.1 %)	8 (0.2 %)	3 (0.09 %)	324 (10.3 %)
<b>Brain</b>	5 (0.2 %)	157 (4.9 %)	9 (0.2 %)	7 (0.2 %)	178 (5.6 %)
<b>Kidney</b>	9 (0.2 %)	128 (4 %)	7 (0.2 %)	5 (0.1 %)	149 (4.5 %)
<b>Spinal cord</b>	2 (0.06 %)	126 (4 %)	3 (0.09 %)	1 (0.03 %)	132 (4.2 %)
<b>Pancreas</b>	5 (0.1 %)	113 (3.5 %)	5 (0.1 %)	1 (0.03 %)	124 (3.9 %)
<b>Heart</b>	7 (0.02 %)	89 (2.8 %)	11 (0.3 %)	7 (0.02 %)	114 (3.6 %)
<b>Bones</b>	1 (0.03 %)	102 (3.2 %)	6 (0.1 %)	2 (0.06 %)	111 (3.5 %)
<b>Orbit</b>	3 (0.09 %)	97 (3 %)	4 (0.1 %)	2 (0.06 %)	106 (3.3 %)
<b>Muscles</b>	3 (0.09 %)	89 (2.8 %)	4 (0.1 %)	1 (0.03 %)	97 (3 %)
<b>Eye</b>	3 (0.09 %)	81 (2.5 %)	6 (0.1 %)	2 (0.06 %)	92 (2.9 %)
<b>Skin</b>	2 (0.03 %)	75 (2.3 %)	6 (0.1 %)	1 (0.03 %)	84 (2.6 %)
<b>Ovary</b>	1 (0.03 %)	70 (2.2 %)	0 (0 %)	1 (0.03 %)	72 (2.2 %)
<b>Thyroid</b>	0 (0 %)	63 (2 %)	0 (0 %)	1 (0.03 %)	64 (2 %)
<b>Uterus</b>	0 (0 %)	59 (1.8 %)	0 (0 %)	0 (0 %)	59 (1.8 %)
<b>Parotid</b>	2 (0.06 %)	50 (1.5 %)	1 (0.03 %)	1 (0.03 %)	54 (1.6 %)
<b>Gall Bladder</b>	2 (0.06 %)	41 (1.3 %)	0 (0 %)	2 (0.06 %)	45 (1.4 %)
<b>Breast</b>	0 (0 %)	34 (1 %)	0 (0 %)	0 (0 %)	34 (1 %)
<b>Urinary Bladder</b>	1 (0.03 %)	29 (0.9 %)	3 (0.09 %)	1 (0.03 %)	34 (1 %)

<b>Bowel</b>	0 (0 %)	30 (0.9%)	2 (0.06 %)	1 (0.03 %)	33 (1 %)
<b>Ribs</b>	4 (0.1 %)	25 (0.7 %)	0 (0 %)	0 (0 %)	29 (0.8 %)
<b>Testis</b>	0 (0 %)	26 (0.8 %)	0 (0 %)	0 (0 %)	26 (0.8 %)
<b>Miscellaneous</b>	0 (0 %)	72 (2.2 %)	3 (0.09 %)	0 (0 %)	75 (2.3 %)
<b>Total</b>	275 (8.7 %)	2,570 (81.8 %)	217 (6.9 %)	79 (2.5 %)	3,141 (100 %)

**Table 3: The distribution of academic search engines according to the organ affected.**

## Discussion

Hydatidosis conveys a common tropical parasitic disease encountered in many regions of the world, especially Africa, South America, and Asia, with an approximate occurrence of more than one million individuals. Hydatid cyst burdens governments with a charged expenditure (AI-Naimi S, 2012) (Laatamna A, 2010). It is a preventable tropical disease with a principal infection in animals such as cattle, cows, and dogs. Hydatid disease is common in Iraqi rural society with an impact on the health of the citizens and government burdens (Ali S, 2012) (Abdulhameed M, 2018) Thus, I reviewed the Iraqi papers concerning this topic in addition to my experience. The review of this tropical infection adds to the Iraqi library and enhances Iraqi researchers' focus on this subject. Many academic search engines are well-known like Google scholar, World Cat, PubMed. Iraqi academic search engine is the Iraqi Academic Scientific Journals website. The author selected some of the familiar international academic search engines and the Iraqi Academic Scientific Journals website to review the (hydatid cyst) in Iraqi writings. As seen in Table 1 and Doughnut chart, the reader may notice that 275 papers in ISAJ for the predefined search which indicates the importance of this topic as hydatid cyst was common in Iraqi society. The Iraqi culture still has farm animals, although the latter decreased in the last 30 years with the modernization of Iraqi towns and rural farms (Khaleel K, 2013) (Omar D, 2021).

Despite the small percentage of these papers (8.7 %) to the total papers on this topic due to many causes like authors' preferences, journal spread, and economic causes.

Google Scholar expressed 2,570 papers for the predefined search (by setting the search (at any time); for the (hydatid+Iraq) on the website engine, this result was because many Iraqi researchers after 2003 submitted their papers to international journals. Moreover, many Iraqi researchers published their articles in Scopus journals after 2016. These causes explain the large percentage of the papers (81.8 %) in Google scholar in this predefined search (AZIZH, 2022) (Al-Difaie R, 2020). WorldCat search engine showed 217 studies for the predefined search which means that this engine not included all the papers due to technical settings or limitations in the search properties. PubMed showed the lesser result (79) papers of the predefined search which indicates the limitation of this engine in the specified search. As noted in Table 2 and Figure 2, eighteen papers in Google Scholar had abstracts about hydatid cysts, for the review papers of hydatid cysts in Iraqi peoples, thirty-three papers (0.9 %) were in WorldCat. Twenty-six papers (0.8 %) dealt with the epidemiology of hydatidosis in this engine. Thirty-six papers (1.1 %) were in IASJ about the diagnosis of hydatid cysts. Nineteen articles (0.6 %) were in Google Scholar on the laboratory investigations for the detection of hydatid cysts, twenty-two studies (0.7 %) in WorldCat studied the imaging investigations of hydatid cysts in Iraqi people, 178 papers in IASJ (5.6 %) about the management of hydatid cysts, 1891 articles were in Google Scholar (60 %) dealt with the case reports of hydatid cysts, thirteen documentations in Google Scholar (0.4 %) for the conferences on hydatid cysts, 266 books (8.4 %) in Google Scholar dealt with hydatid cysts in Iraqi citizens, there were only five papers (0.1 %) in Google Scholar, while the other engines were lacking, regarding the nursing knowledge about hydatid cysts, 243 papers (7.7 %) were in Google Scholar on the herbal medicine for the

treatment of hydatid cysts. In all these results, the dominance of academic search engines related to many causes like journals indexed in the engine, journal type, topic type, author preferences, open access journal, and the availability of papers in these engines.

The reader can notice in Table 3 the distribution of academic search engines according to the organ affected by hydatid cysts in Iraqi people as a predefined search, 579 papers concerning the liver (18.4 %) which goes well with the published papers worldwide as the liver is the main organ affected by hydatidosis (Mohamad A, 2009) (Jaén-Torrejimeno I, 2023)

Three hundred fifty of them were in Google Scholar as it the expanded, and evolving academic search engine, five hundred twenty-six papers documented hydatid cysts in the lung for the Iraqi people (16.7 %), and this finding went parallel with the international papers concerning the lung as the second organ commonly involved in hydatidosis, three hundred seventy-eight of them were in Google Scholar (Hammodat O, 2021) (Nitin S, 2023).

Three hundred twenty-four papers concerning spleen affection by hydatidosis in Iraqi people (10.3 %), and this outcome is similar to the internationally published studies, two hundred sixty-eight of them were in Google Scholar (Sadek A, 2022) (Younis K, 2008). One hundred seventy-eight papers included hydatid cysts in the brain of Iraqi peoples, which is identical to the documented studies all over the world about hydatidosis brain infestation, one hundred fifty-seven of them were in Google Scholar (Alsaady M, 2019) (Hammood E, 2013).

One hundred and forty-nine papers (4.5 %) were on hydatid cysts in the kidney in Iraqi people, although it is an uncommon location of hydatid disease, it is still common in Iraqi people, one hundred twenty-eight of these papers were in Google Scholar (Awad A, 2016) (Khalili N, 2023)

One hundred thirty-two papers (4.2 %) dealt with the spinal cord in the Iraqi people. These cysts challenge expert surgeons to remove to avoid nerve injury, one hundred twenty-six of these articles were in Google Scholar. (Mohammed A, 2019) (Caglar Y, 2019)

There were one hundred twenty-four papers (3.9 %) regarding pancreas affections by hydatid cysts in the Iraqi people. These cysts cause many complications like fistulae and present as a vague mass demanding CT scan and MRI. One hundred thirteen papers were in Google Scholar (Nasir G, 2006) (Abu-Alhail M, 2008). One hundred fourteen papers (3.6 %) about the heart as an organ for hydatid cyst infestation in Iraqi people, although they are rare and life-threatening (Al-Falluji W, 2019) (Noaman H, 2017).

One hundred eleven papers (3.5 %) on the hydatidosis of the bones in the Iraqi people, most of these involved large bones, and need total bone replacement (Hooper J, 1977) (Drew M, 2015)

One hundred six papers (3.3 %) were on the orbital hydatidosis in the Iraqi people. Iraqi researchers described these orbital cysts in detail with the way of cyst removal as these cysts may rupture and recur again (Al Khalili H, 2016) (Hayder A, 2021). Ninety-seven papers (3 %) concerning the muscles in Iraqi patients, although it is a rare presentation and needs muscle sparing technique by an expert surgeon (Ali A, 2013) (IBRAHIM H, 2014) Ninety-two papers (2.9 %) dealt with the hydatid cysts of the eyes in the Iraqi people. The eye is an uncommon site of hydatidosis, but Iraqi researchers studied



even the histopathological changes in the eye of *Ruttus norvegicus* L, which gives a clear clue to the advancement of research of hydatid disease in Iraq (Hadi Z, 2014) (Attash S, 2014).

Eighty-four papers (2.6 %) about the hydatid cysts of the skin in Iraqi people. Skin is one of the rarest sites of hydatid cysts and it may be the site of a fistula from the liver, lung, or other deeper organs (Dagash M, 2009) (Gök M, 2020) Seventy-two papers (2.2 %) discussed ovarian hydatidosis in Iraqi females. Ovarian hydatid cyst is a very rare site of hydatidosis as the most common ovarian cysts are functional cysts. Iraqi scientists explored ovarian hydatidosis in the animals with good experiences (Mohammed A, 2021) (Abdullah A, 2016) Sixty-four papers (2 %) for the hydatid cysts of the thyroid gland in Iraqi patients. Thyroid cysts are common and they are mostly degenerative thyroid gland adenomas. Iraq is an endemic region of hydatidosis, so hydatid cysts in the thyroid were reported and explained in the international literature (Majeed A, 1974) (AL QASSAB K, 1982)

Fifty-nine papers for the uterus in Iraqi females (1.8 %). The uterine hydatid cysts require radiological investigations like ultrasound, CT scan, and MRI. The female's age can assist in the prediction of the site of these cysts (Zahawi H, 1999) (Ahmed L, 2020) Fifty-four papers for parotid involvement by hydatid cysts in Iraqi patients (1.6 %). The parotid gland is an unexpected site of hydatidosis and needs a high index of suspicion with a CT scan for diagnosis. Iraqi surgeons documented hydatid cysts in parotid gland and described their management (Qays A, 2007) (Hammoodi S, 2023)

Forty-five studies for gall bladder inhabitant of hydatid cysts in Iraqi patients (1.4 %). It is so difficult to assess intrabiliary rupture of hydatid cysts, but modern radiological tools like MRCP and the advancement of ERCP allow the management of these cysts easier (Kattan Y, 2007) (Imran S, 2016)

Thirty-four papers were on hydatidosis (1 %) for each of the breast and urinary bladder in Iraqi patients. For hydatidosis of the breast, which is a rare location for the hydatid to affect, Iraq is an endemic country where the hydatid disease was familiar. The Iraqi researchers mentioned the hydatid cysts of the breasts and dealt with them in the right way. For the urinary bladder, the diagnosis of hydatidosis dated to 1984 by ultrasound detection, which is earlier in

the middle east region as it was a primitive version and the radiologists were inexpert at that time. Iraq was the pioneer in using ultrasound at that time and the detection of hydatid cysts in the urinary bladder by ultrasound was a new discovery (AL-SARRAF S, 2010) (Shanshill M, 1989) (Arif S, 2018) (Hertz M, 1949).

Thirty-three papers reported bowel affection in Iraqi papers (1 %). The bowel is the site of transmission of the parasite in its life cycle but it is not the definite organism to occupy. Humans ingested the parasite eggs from dogs and sheep, then these eggs may hatch in the bowel and form hydatid larvae. The Iraqi researchers explored the bowel as a primary site for hydatidosis and a part of transmission in the hydatid life cycle in man and animals (Senekji H, 1939) (Al-Marsomy W, 2021).

Twenty-nine papers were written for human ribs as the site of hydatid cyst affections in Iraqi patients (0.9 %). The ribs may be the primary site or affected as the secondary site and even might create fistulae to the skin. The Iraqi surgeon reported these infestations in detail as part of their wide experience in thoracic surgery (Shehatha J, 2008) (Al Dahhan O, 2011).

Twenty-six papers for testicular affections by hydatid cysts in Iraqi males (0.8 %). The testes are a very rare site of hydatidosis, still, these papers documented the man and animal studies of hydatidosis in testes. Iraqi scientists successfully verified hydatid cysts in testes as Iraq is an endemic country (Ahmed H, 2018) (Abdulhameed M, 2018).

Iraqi health leaders did many successful steps to improve Iraqi public health and health institutes all over the health provenances in the last 5 years. They established efficient agenda and proved their work free of charge by a cooperative healthcare team as in the covid-19 crisis and other tropical infections. Iraqi health policy for the next year as United States gives a hopeful future for their people against hydatid disease (Alhiti H, 2021) (Alhiti H, 2021) (Alhiti H, 2022).

Google Scholar is the dominant academic search engine for the large possession of papers in all of these publications due to the engine properties, journal indexation, type of papers, open-access articles, and author preferences.

### My experience in abdominal hydatidosis:

1. Prevention is more crucial than treatment.
2. CT scan clarifies the hydatid cyst extent.
3. Preoperative anti-parasitic drugs (Mebendazole and/or Albendazole) for (6-12) weeks can aid the curative surgery.
4. Laparoscopic approach is the best choice for simple cases, first surgery, experienced surgeon, and fit patients.
5. An experienced surgeon and assistant give the best results.
6. Two suckers, butadin-soaked gauzes, and intra-cystic injection of hypertonic saline decrease recurrences.
7. Open approach is the best choice for complicated cases, recurrent cases, deficient materials, and previous abdominal operations.
8. Postoperative anti-parasitic drugs (Mebendazole and/or Albendazole) for (6-12) months can prevent recurrences.
9. Hydatid disease recurrence requires team discussion, the involvement of the most experienced surgeon, and a (wait-and-see) approach to avoid failure.

### Conclusions

Iraqi researchers studied hydatidosis comprehensively and published their papers in well-known academic engines.

### Original research article

### Not submitted elsewhere

### No conflict of interest

### Informed ethical consent was taken

### Not funded

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