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Research Article

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Some Clinical Manifestations and Laboratory Findings of Human Gigantica Fascioliasis in Pregnant Women and Children in Central-Coastal Provinces, Vietnam, 2003-2017

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Abstract

Introduction: *Fascioliasis is a disease of the hepatobiliary system, caused by Fasciola spp that are increasing and threating of public health in the tropic areas, including of Central coastal of Vietnam. World Health Organisation estimates that at least 2.4 million people are infected in more than 70 countries worldwide, with several million at risk, and particularly, no continent is free from fascioliasis. This study carried out to evaluate several typical clinical and paracinical aspects in the pregnant women and children groups with fascioliasis.*

Methods: *With the descriptive cross-sectional study design, and sample size in line with hospital based data.*

Results: *the data post-analysis showed that total of 94 pregnant women and 212 child with gigantica fascioliasis were enrolled:- In the pregnant women group: the major clinical symptoms of epigastric and Chauffard Rivet triangle pain (95.74%), subshoulder muscle pain (97.87%), gastrointestinal disturbances as abdominal pain plus constipation (14.89%), loosed stool (22.34%), nausea and/or vomit (29.78%), mild fever (68%), allergic reaction with pruritis and urticaria (64.89%), mild anemia (4.26%), rare symptoms may be hepatomegaly (6.38%), chest pain, dyspnoea (43.62%), jaundice (2.13%); Laboratory parameters were positive ELISA test with Fasciola gigantica antigen (95.74%), hepatobiliary lesions by ultrasound (97.87%), majority in right liver (90.32%), eosinophilia is the predominant indicator (90.42%), In the children group: the clinical manifestations included of epigastric and Chauffard-Rivet area pain (94.34%), flatuence, nausea and intermittent vomiting (76.41%), digestive disoders (40.57%), allergy (30.66%), fatigue plus weight loss (12.74%); laboratory findings included of hepatobiliary lesions by US (100%), positive ELISA with Fasciola gigantica antigen (96.70%), eosinophil of 93.39% and 1.90% positive copro-examination with Fasciolae eggs.*

Conclusions: *In pregnant women, symptoms are indistinguishable from hepatobiliary, digestive tract diseases or overlap with gestation terrains, and clinical signs of paediatric fascioliasis may mimic a wide spectrum of hepatobiliary disorders laboratory parameters and imaging diagnostics, especially in FasELISA, hypereosinophilia and liver lesions by ultrasound were very useful in positive diagnosis.*

Keywords: Fascioliasis, Clinical Aspects, Laboratory Findings.

Introduction

Fascioliasis, a zoonotic disease of domestic herbivorous animals such as sheep, cattle and goats, which are the definitive hosts, is caused by infection with the liver fluke *Fasciola hepatica*. Humans become infected by eating uncooked, and usually unwashed, aquatic vegetables on which larval parasites are encysted. In the past, fascioliasis was limited to populations within well-defined watershed boundaries; however, recent environmental changes and modifications in human behaviour are defining new geographical limits and increasing the populations at risk. As for all helminths, control options for *F. gigantica* are based on interrupting the life cycle of the parasite and several biological and chemotherapeutic options.

Concerning in epidemiology of fascioliasis in the world and Vietnam, the epidemiological pattern of fascioliasis is quite varied: the infection usually has a hypo-endemic pattern, with low and stable levels of prevalence among a defined population. Sporadic outbreaks may occur among such populations: these are usually related to sudden changes in climatic conditions that boost the life-cycle of either the parasite or the snail, or both. Scientists have also found that the epidemiology of fascioliasis is strictly linked to the geographical

and environmental characteristics of the area where transmission occurs, and different patterns can be distinguished: this suggests that fascioliasis may adapt to different ecological niches. In Africa and Asia, where both *F. hepatica* and *F. gigantica* are present, mixed infections are possible. In Asia, hybridization among the two species occurring in co-infected humans or animals has been describedhe offspring resulting from such hybridization is characterized by intermediate morphological characteristics between the two species as well as by different ploidies (diploid, triploid, and mixoploid); such worms are frequently non-fertile [1].

Until recently, human cases occurred occasionally but are now increasingly reported from Europe, the Americas and Oceania (where only F. hepatica is transmitted) and from Africa and Asia (where the two species overlap). WHO estimates thatat least 2.4 million people are infected in more than 75 countries worldwide, with several million at risk. No continent is free from fascioliasis, and it is likely that where animal cases are reported, human cases also exist [1].

In Vietnam, it was always considered to be mainly a veterinary disease, and until the 1980s, only sporadic cases were reported in humans. More recently, its growing prevalence in human populations has prompted health authorities to address the problem effectively. Human fascioliasis is nowadays reported from more than 75 countries across the world [1]. Before 1997, human fascioliasis (probably due to *F. gigantica*, although the presence of *F. hepatica* in Viet Nam cannot be excluded yet) was only sporadically reported. In the late 1990s, a sudden increase in the number of cases reported made fascioliasis an emerging disease in the country. A situation analysis conducted in the summer of 2006 has shown that the most affected group is women aged 17–49 years. Cases are reported from many districts throughout Vietnam, but especially from the central part of the country. It is not clear why few cases are reported from the Mekong delta area in southern Vietnam. Community-based surveys would be needed to obtain a clearer picture of distribution and to fully assess the burden due to fascioliasis [1].

Both animals and humans contract fascioliasis infection in the same way. Travelers to and immigrants from regions of high endemicity are most frequently affected, as illustrated by a survey of imported cases in the European countries.

Methods and materials

Location and timeframe

- Study was conducted at the parasitic clinic of Institute of Malariology, Parasitology, and Entomology Quinhon, Vietnam;
- From June, 2003 to June, 2017.

Subjects and methods

- All of patients belonging to vulnerable groups (children, pregnant women) who have confirmed diagnosis according to WHO informal guidelines [1].
- Study design: Cross-sectional descriptive study with hospital based sample size.
- End-points measures: some epidemiology, clinical, and laboratory finding parameters.

Inclusion and exclusion criteria

- All patients in age groups and in children and pregnant women groups with confirmed diagnosis with fascioliasis.
- Ability and willingness to comply with the protocol for the duration of the study.
- Informed consent from the patient or from a parent or guardian in the case of children.
- Absence of general danger signs in children and pregnant women.
- Absence of dangerous conditions due to acute and chronic diseases to avoid overlap symptoms.
- Absence of hepatitis virus B, C and liver abscess due to *Entamoeba histolytica*.

Diagnosis techniques [1].

- Routine hepatobiliary system and general internal examination procedures.
- Classical coprology (Kato-Katz technique, a quantitative method for detection of parasite eggs in stool samples). It is a specific but not sensitive diagnostic test, and has been shown to underestimate by 30% the prevalence obtained by FasCELISA. As a consequence, more than one stool examination might be needed for a proper diagnostic conclusion.
- Serodiagnosis (FasCELISA), an immunological tests also exist that allow diagnosis of fascioliasis by detecting specific antigens in blood samples. FasCELISA allows diagnosis of infection in the incubation and acute phases, and in ectopic fascioliasis as well. In particular, FasCELISA is a highly sensitive and specific test.

In the acute phase, diagnosis may rely on:

- History of ingestion of suspect plants or water (2-4 weeks before onset of symptomatology).
- Clinical symptomatology: include fever, tender liver, splenomegaly, bronchitis, pleuritis, pyo-pneumothorax, ascites, and so on.
- Eosinophilia.
- Detection of anti-Fasciola antibodies (Fas2-ELISA) or Fasciola excretory-secretory antigens (FES-Ag) in serum.
- Imaging ultrasound: hypoechogenic liver foci migrating from day to day, splenomegaly.

In the chronic-latent phase, diagnosis may rely on:

- Conic-cup sedimentation technique (examination of larger quantities of stool than the Kato-Katz technique).
- Detection of anti-Fasciola antibodies (FasCELISA) in serum (differentiation between active and past infection).
- Imaging ultrasound: crescents, sludge, calculi, tender gall bladder, decreased contractility of the gall bladder.

Ethic considerations

- In standard, protocol with patients and doctors making decisions together;
- Follow up the good clinical and medicine practices, and consent forms signing;
- Principles of confidentiality and respect for patients' privacy

Data ananlysis

- Data analysed by CDC. EPI – INFO 7 software

Results and Discussions

The clinical epidemiology manifestations in the pregnant women and children group: Some anthropology and possible risk factor features in patients

Table 1: Some anthropology and risk factor features

	Patient's Characteristics	In pregnant women (n = 94)	In children group (n = 212)
1	**Gender**		
	Male	0	94 (44.34)
	Female	94 (100)	118 (55.66)
2	**Locations**		
	Quang Binh	2 (2.13)	6 (2.83)
	Da Nang	2 (2.13)	12 (5.66)
	Quang Nam	29 (30.85)	52 (24.53)
	Quang Ngai	32 (34.04)	60 (28.30)
	Binh Dinh	19 (20.12)	46 (21.7)
	Phu Yen	9 (9.57)	24 (11.32)
	Khanh Hoa	1 (1.16)	12 (5.66)
3	**Possible risk factors**		
	Aquatic vegetables consumption	79 (84.04)	74 (34.91)
	Raw animal livers consumption	3 (3.19)	0
	Drink waters from rivers, lakes….	18 (19.15)	132 (62.26)

Total of 7 central parts provinces in Vietnam with patients, but mostly focus on Quang Nam, quang Ngai, Binh Dinh, and Phu Yen in both pregnant women and children groups. Fascioliasis infection has no apparent racial predilection in this study. In sex, approximately 55.66% of infections occur in females, which may reflect dietary or recreational exposures (?) similar to other studies [2].

When pathogen eggs in mammalian stool are deposited in tepid water (22 - 26°C) miracidia appear, develop, and hatch in 9-14 days. These miracidia then invade many species of freshwater snails, in which they multiply as sporozoites and redia for 4-7 weeks. They leave as free-swimming cercaria that subsequently attach to watercress, water lettuce, mint, parsley, or khat. Humans are incidental hosts for *F. hepatica* and *F. gigantica* due to ingestion of aquatic vegetables consumption (84.04% in pregnant women and 34.91% in children group) or drink waters from rivers, lakes (19.15% and 62.26%), and the other hand, raw animal livers consumption (3.19% in pregnant women group) was also possible food that lead to human fascioliasis as medical literature reported.

Some gestational ages and trimesters related to gigantica fascioliasis

Table 2: Gestational age and fascioliasis detected periods

	Pregnant women's features	n (%)
1	**Age**	31 (19 – 43)
3	**Gestational age and trimester**	
	First trimester	
	Second trimester	
	Third trimester	
4	**Fascioliasis detection on gestational**	
	Pregravidic period	2 (4.26%)
	During pregnant period	90 (95.74%)

Infestations and *F. gigantica* liver abscess in pregnant women may occurred in any gestational age and trimester, but cases detected in third trimester (52.13%) was much more than second (29.79%) and first trimester (18.08%). Time for fascioliasis diagnosis was during pregnant period (95.74%), only 2 cases in pregravidic period but unwanted pregnancy later.

Clinical characteristics on pregnant women with fascioliasis

Table 3: The clinical manifestations of fascioliasis on pregnant women

	Clinical manifestations and signs (n = 94)	In pegnant women	
		n	%
1	Epigastric and chauffard-rivet pain	90	95.74
2	Right upper-quadrant abdominal tenderness	52	55.32
3	Nausea and/ or vomitting	28	29.78
4	Bilateral subshoulder radiated pain	92	97.87
5	Fatigue, lethargy, and dyspesia	64	68.08
6	Fever and / or chills	12	12.76
7	Pruritis, rash and urticaria	61	64.89
8	Abdomen pain and constipation	14	14.89
9	Loose or broken stool	21	22.34
10	Hepatomegaly without splenomegaly	6	6.38
11	Hepatomegaly with splenomegaly	2	2.13
12	Sternal behind pain and short breath	41	43.62
13	Skin and conjunctival jaundice	2	2.13
14	Clinical anemia	4	4.26

Although animals can support enormous worm burdens without developing serious disease, *Fasciola spp*. can cause severe, even fatal disease in humans. After an incubation phase, human fascioliasis can be grossly distinguished in acute fascioliasis (when immature worms are migrating through the liver) and chronic-latent fascioliasis (when mature worms are lodged in the bile ducts).

In clinical aspects in pregnant women group, we found mostly of bilateral subshouder radiated pain, epigastric and chauffard-rivet pain, pruritis and multiform rash/ urticaria, Murphy point and right upper-quadrant abdominal tenderness, sternal behind pain and short breath were 97.87%; 95.74%; 68.08%; 64.89%; 55.32%; 43.62% respectively. Other symptoms and signs included of digestive discomforts (nausea, vomit, stoll disorder) with low proportion. Very rare symptoms were enlarged liver with or without enlarged spleen due to immature flukes may deviate during migration, entering other organs and causing ectopic fascioliasis. Jaundice and anemia. Symptoms (fever, abdominal pain, gastrointestinal disturbances, skin rashes, respiratory symptoms) can last from 2 weeks to 4 months; hepatosplenomegaly, ascites, anaemia, chest signs and jaundice may also be present.

In late phase, obstruction may not resolve within days and lead to jaundice as above mentioned symptom. Also, bacterial superinfection with acute cholangitis and cholecystitis may complicate biliary stasis, lead to sepsis and septicemia (fever and chills). Symptoms include biliary colic pain (due to obstruction, spasm and distension of the common bile duct), epigastric pain, fatty food intolerance, nausea, intermittent jaundice, pruritus, right upper-quadrant abdominal tenderness and fever (in bacterial superinfection). The frequent occurrence of anaemia is mainly attributable to loss of blood in the bile (haemobilia) due to mechanical damage of the mucosa of the biliary tract, and possibly to increased destruction and decreased production of red blood cells.

Some clinical manifestations in the children group

Tablet 4: Paediatric fascioliasis with clinical symptoms

	Clinical manifestations (n = 212)	In children group	
1	Epigastric and Chauffard rivet pain	200	94.34
2	Dyspepsia, nausea and vomitting	162	76.41
3	Sweating and malaise	127	59.91
4	Headache, bi-shoulder muscles fatigue	46	21.70
5	Digestive discomforts (loose stool/ constipation)	86	40.57
6	High fever and intermittent chills	57	26.89
7	Allergy (pruritis, rash, cough)	65	30.66
8	Enlarged liver without splenomegaly	24	11.32
9	Chest pain along with short breath	16	7.55
10	Lost weight (4 ± 1kg)	16	7.55

One of difficults views approach to paediatric patients was past history investigation. Hence, there limited data on symptoms, especially in latent phase, symptoms are nonspecific and usually include vague gastrointestinal disturbances. The proportion of asymptomatic subjects is apparently high. Similar to pregnant women group, epigastric and Chauffard rivet pain was also prominent (94.34%), next to dyspepsia, nausea and vomitting (76.41%), lead to sweating and malaise (59.91%), then digestive discomforts and allergy reaction (pruritis, rash, cough) were 40.57% and 30.66%, respectively. Several other symptoms were seldom in headache, sub-shoulder muscles fatigue (21.70%), high fever and intermittent chills (26.89%), enlarged liver without splenomegaly (11.32%) and lost body weight (12.74%) due to dyspepsia and intolerance food during ills.

Laboratory findings of haematology, biochemistry and immunology parameters

Table 5: The haematological and biochemistry parameters in children and pregnant groups

Laboratory finding parameters	In children group	In pregnant women
1. Complete blood count		
Haemoglobin (g/l)		
Range	8.7 - 12.5	12.0 -13.5
Mean ± s	10.4 ±1.42	12.6 ± 1.26
WBC/mm^3		
Range	6.000 - 11.250	9.730 - 10.240
Mean ± s	6.700 ± 1.620	8.501 ± 1.810
Eosinophil/mm^3		
Range	117 - 6556	117 - 6556
Mean ± s	797 ± 1827	797 ± 1827
2. Biochemistry parameters		
Alk.phosphatase (BT:100 - 290UI)		
Range	134 - 290	137 - 596
Mean ± s	239 ± 59.34	252 ± 60.34
ALT/SGPT (nornal < 37UI/L)		
Range	32 – 86	15 – 95
Mean ± s	27.50 ± 16.5	6.57 ± 19.5
AST/SGOT (nornal < 40UI/L)		
Range	10 - 66	21 - 78
Mean ± s	18.90 ± 16.9	19.90 ± 16.8
Urea (normal: 2.49 - 7.47mmol/L)		
Range		
Mean ± s		
Creatinin (normal 53 - 115mmol/L)		
Range	72 - 147	87 - 112
Mean ± s	89.12 ± 11.22	86.54 ± 16.30

The above table 5 showed that all haematological and biochemistry parameters were in reference or normal ranges of laboratory finding Vienamese values. Although hepatobiliary system involved pathology and pathogenesis, the aspartate aminotransferase (AST), alanine transaminase (ALT), and alkaline phosphate were not changed in normal ranges. The parameters of serum urea and creatinin were also normal, these allow to use safety effective drugs. Especially, blood eosinophile was good indicator for human fascioliasis diagnosis.

Table 6: Antibody titer in optimal density and eosinophil status

Antibody titer in optimal density	Negative		≥ 1 - < 1.2		≥ 1.2 - < 1.5		≥ 1.5	
	n	%	n	%	n	%	n	%
In pregnant women (n = 94)	4	4.26	71	75.53	8	8.51	11	11.70
In children group (n = 212)	7	3.30	71	33.49	124	58.49	10	4.72
Proportion of eosinophil in CBCs	< 6%		≥ 6 - 10%		11 - 20%		> 20%	
	n	%	n	%	n	%	n	%
In pregnant women (n = 94)	3	3.19	6	6.38	76	80.85	9	9.57
In children group (n = 212)	4	1.89	10	4.72	48	22.64	150	70.75

Before treatment, concerning to serum antibody titer of both study groups, most of them were positvie in optical density range (≥ 1.0), but antibody titer from ≥ 1 to < 1.5 in majority with 33.49% and 58.49% (in children group) and 75.53% and 8.51% (in pregnant women group), *vice versa* antibody titer ≥ 1.5 were occupied lower rate of 11.70% (in pregnant women group) and 4.72% (in children group). Especially in this data set, there were 4 (4.26%) and 7 (3.30%) with negative ELISA results, these were possible because of using *F. gigantica* specialized ELISA kit, sometimes misdiagnosis of *F. hepatica* (in spite of rare in Vietnam endemic areas), or the positive coprology (Kato-Katz technique for parasite eggs) and negative serology (Fas2-ELISA for Anti-Fas2 IgG) related chronic liver infection [1]. But those cases met diagnosis criteria in both clinical aspects, eosinophilia, and ultrasound liver lesions, hence they were enrolled in our study

High leukocyte count especially due to high eosinophilia, and high IgE levels are common features. As in fascioliasis, intermittent obstructive episodes with frank symptomatology are possible; signs may include intermittent eosinophilia. Therefore, still have 3.19% and 1.89% without eosinophilia in complete blood cells formula in pregnant women and children group, respectively. The rest of cases with eosinophile more than 6%, notably in 10-20% range (in pregnant women group) of 80.85% and more than 20% in children group.

Table 7: Kato-Katz technique for fasciolae eggs and other protozoa, helminths

Coprology examination	Fasciolae eggs				Nematode		Protozoa	
	Negative		Positive					
	n	%	n	%	n	%	n	%
	47	100	0	0	8	17.02	0	0
	103	98.09	2	1.90	16	15.24	3	2.86

Coproparasitological tests are applied to confirm the chronic infection, detecting the eggs in the stool. Not at all cases in both study groups were tested fecal, only 47/94 cases in pregnant women group and 105/212 cases in children group conducted copro-examination. Due to transmission of the infection in the environment is usually perpetuated by animals. Humans do not typically contribute to the parasite's life-cycle; they are only occasionally infected after failure to observe basic hygiene measures (consuming larvae-contaminated uncooked vegetables or drinking larvae-infected water). Adult fluke worms produce eggs about 4 months (with a range of 3-18 months) after infection; these eggs traverse the sphincter of Oddi and intestine and then continue the cycle of infection. Moreover, *Fasciola* worms are not well adapted to humans and, in some cases, fail to develop into mature adult worms and produce eggs. Therfore, in this study, only 2 children (1.90%) positive fasciolae eggs – as gold standard for fascioliasis diagnosis.

Some of them infected other ascarid, hookworms (17.02% and 15.24%) in both vulnerable groups and 2.86% of *Entamoeba histolytica* in children group. Multiparasitism (co-infection) should also be considered a synergistic determinant of morbidity in population in endemic areas in Central part of Vietnam.

The hepatobiliary lesions by abdomen ultrasound analysis

Table 8: The lesions on hepatobiliary system by sonography image analysis

	Lesion location by hepatobiliary system anatomy	In pregnant women		In children	
		n	%	n	%
1	Liver parenchymal cells	90	95.74	200	94.34
2	Side by side Glisson capsule	9	9.57	14	6.60
3	Hematoma under liver capsule	6	6.38	6	2.83
4	Gallbladder (erosion, thickening)	5	5.32	2	0.94
5	Biliary tree and common duct	2	2.13	2	0.94
6	Both parenchyma and bile ducts	3	3.2	6	2.83
7	Not yet or underscope of lesions	2	2.13	5	2.36

General abdomen ultrasound diagnostic is an important tool for human fascioliasis. In the acute or invasive phase, flukes migrate through the liver parenchyma and digest hepatic tissue after the larvae excyst in the duodenum, migrate through the bowel wall and peritoneal cavity, and penetrate the Glisson capsule, actions that initiate the acute larval, hepatic, and invasive stages of human infection, causing intense haemorrhage and inflammation that are proportionate to the number of flukes; migration tracks can be observed in histological sections by sonography; flukes sometimes die, leaving cavities filled with necrotic debris that are eventually replaced by scar tissue. In latent phase, flukes that reach the bile ducts may remain there for years. In such cases, fibrosis, hyperplasia and thickening of the walls of the ducts and gallbladder are common findings. In this study, liver parenchymal cells was moslty proportion 95.74% and 94.34% in pregnant women and children group, respectively.

Subcapsular haematoma and acute intra-abdominal haemorrhage may complicate the clinical picture. Here, side by side Glisson capsule of 9.57% and 6.60% and hematoma under liver capsule of 6.38% and 2.83% were also detected in pregnant women and children group, respectively. Larvae mature and migrate through the liver into the large hepatic and common bile ducts, mature flukes consume hepatocytes and duct epithelium and reside for years in the hepatic and common bile ducts and occasionally in the gall bladder; this is the chronic adult biliary stage of infection. Acute and chronic stages can overlap, particularly in a high-level infection. Influence on gallbladder (wall erosion, thickening) of 5.32% and 0.94% and biliary tree and common duct of 2.13% and 0.94% in pregnant women and children group, respectively. Some cases showed that lesions in both parenchyma and bile ducts, and total of 7 cases in both groups without lesions by ultrasound analysis, may be either very early phase or pregnancy status overlapping, hence we were difficult to view. Some cases reconfirmed by magnetic resornance imaging (MRI) for biliary tree observation.

Table 9: The parenchymal cells lesions by liver sublobes anatomy

Anatomic lobes and Couinaud segments	Lesions in liver sub-lobes	Pregnant women	In children	Lesions in lobes
		n (%)	n (%)	
Spigel or caudate lobe	Sub-lobe I	0 (0)	2 (0.97)	
Lateral or left lobe	Sub-lobe II	1 (1.06)	14 (6.76)	
	Sub-lobe III	22 (23.4)	36 (17.2)	
Quadrate lobe	Sub-lobe IV	46 (48.94)	111 (53.62)	
Right lobe	Sub-lobe V	60 (63.83)	193 (93.24)	
	Sub-lobe VI	76 (80.85)	165 (79.71)	
	Sub-lobe VII	87 (92.55)	176 (85.02)	
	Sub-lobe VIII	79 (84.04)	197 (95.17)	

All cases were reviewed by ultrasound and MRI confirmation (5 cases), involving in the liver parenchymal cells lesions, normal. Special point in fascioliasis abscess in liver was no clear circle limitation, diffused from lobe to lobe in parenchymal cells. A majority of abscess in right lobe in both pregnant women and children groups (sub-lobe V, VI, VII, VIII) from 48.94% to 92.55% in pregnancy and from 53.62% to 95.17% in children group, and most of them involved in 2 or more lobes of liver simultaneously. At least was spigel or caudate lobe (I). Several cases have damaged in lateral or left lobe or quadrate lobe. Present study proposes a computer-aided diagnostic system to assist radiologists in identifying focal liver lesions in B-mode ultrasound images. Not only help to detect and diagnosis, but also in follow up recovery progress after treatment.

Table 10: The echo and homogenous or reverberation in hepatobiliary system lesions

Imaging focal lesions and its echo sound	In pregnant women	In children
Non hemogenous hepato-parenchymal focal lesions	82 (87.23)	189 (91.30)
Gallbladder thickening wall	2 (2.13)	8 (3.86)
Isolated bile duct thickening wall (fluke track)	1 (1.06)	3 (1.45)
Hyperechoic tract without back shadow	2 (2.13)	16 (7.72)
Hyperechoic lesions	3 (3.19)	5 (2.42)
Hypoechoic lesions	86 (91.49)	192 (92.75)
Mixed echoic lesions	82 (87.23)	156 (75.36)
Intergrated microabscess	44 (46.81)	124 (59.9)

Depend on infestation phase, the echo and homogenous or reverberation in hepatobiliary system lesions were veried in multiforms. Firstly, majority of non hemogenous hepato-parenchymal focal lesions 87.23% and 91.30% in pregnant women and children group, respectively. These accompanied hypoechoic lesions 91.49% and 92.75% or mixed echoic lesions (87.23%; 75.36%) or intergrated microabscess (46.81%; 59.9%) in the pregnant women and children group, respectively. In the other hand, some specific pictures in ultrasound were analysis by ultrasound and MRI confirmation (isolated bile duct thickening wall or fluke track, hyperechoic tract without back shadowing, gallbladder thickening wall, etc). Due to chronic (obstructive) phase, while obstructive episodes may occur intermittently during the latent phase, the chronic phase is characterized by regular and constant obstruction. Parasites, parasite fragments or debris obstruct the common bile duct resulting in swelling of the gallbladder; acute pancreatitis is a possible complication.

There are 5 cases with unclear picture on sonography. The evaluation performed by multidetector row computed tomography (MDCT) and magnetic resonance imaging (MRI) and previous ultrasound results. Owing to MRI and MDCT, we could detect of diversified lestions in hepatobiliary.

Conclusions

Hepatobiliary Fasciola spp. flukes is a major public health problem in Central part of Vietnam. In highly endemic areas, reinfection is common and new infections may superimpose on old ones; as such, the acute phase may be prolonged and overlap with the latent or chronic ones. Specific or possible risk factors and geographic areas for these flukes have been reported in this study.

On the clinical epidemiologial aspects showed that in pregnant women with fascioliasis, symptoms and signs are indistinguishable from hepatobiliary, digestive tract diseases or overlap with gestation terrains, and clinical signs of paediatric fascioliasis may mimic a wide spectrum of hepatobiliary disorders. Particularly, the combination of clinical pictures, laboratory finding parameters and imaging diagnostics, especially in FasELISA, hypereosinophilia and liver lesions by ultrasound and MRI or MDCT (in special cases) were very useful in definitive and confirmed diagnosis [3-15].

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