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CASE REPORT

Acute fatty liver of pregnancy, report of two cases

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ABSTRACT

Acute fatty liver of pregnancy (AFLP) is a rare and potentially fatal disease that occurs in the 3rd trimester of pregnancy. This article presents two clinical cases of AFLP and provides a review of the literature on this pathology. Diagnosis of AFLP is based on clinical, laboratory and radiological criteria, and treatment involves early recognition of the condition with delivery and full supportive maternal care are extremely important for the outcomes of both mother and child. However, AFLP can lead to serious complications. A better understanding of this pathology is needed to improve the prognosis and survival of AFLP patients.

Keywords: fatty liver, acute liver failure, pregnancy, icterus, gyneco-obstetric emergency

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INTRODUCTION

Acute fatty liver of pregnancy (AFLP) is an obstetric emergency characterized by the infiltration of fatty acids into the maternal liver, resulting in significant liver damage, which, in its most severe forms, may be similar to acute liver failure, occurring at an approximate rate of five cases per 100,000 pregnancies [1]. it very rarely occurs after 22nd weeks of gestation; but usually manifests after the 30th week of gestation [2]. Moreover, it occurs a particular interest due to its increasing prevalence and impact on maternal and fetal health. Risk factors include primiparity, coexistent diagnosis of other liver diseases, including pre-eclampsia (PE), a male fetus and multiple gestations [3].

Swift identification and management of this pathology are paramount due to its substantial risks of morbidity and mortality. The aim of this study is to describe two cases of AFLP in single-fetal pregnancies, and to discuss the main associated clinical, pathophysiological, biological and therapeutic features.

CLINICAL CASE I

Mrs. S. B., 24 years old, IIG IIP, with one child living vaginally, with no particular pathological history, was referred to the gyneco-obstetric emergency department of the CHU Mohamed VI in Marrakech on 21 March 2023 at 11:00 AM, for generalized cutaneous-mucosal jaundice in a mono-fetal pregnancy estimated at 30 weeks of amenorrhea. The history revealed right hypochondrium pain and cutaneous-mucosal jaundice of progressive onset over the past five days, pruritus, poly-uropolydypsia and headache without vomiting, which had been progressing for a month with non-quantified fever, and asthenia without anorexia.

On clinical examination, conscious patient GCS (Glasgow coma scale): 15/15 hemodynamically and respiratory stable, vitals normal with blood pressure 100/60 mmHg, heart rate 88 beats per minute and temperature 37 °C, normal osteotendinous reflexes without lower limb oedema or neurosensory signs. On gyneco-obstetrical examination: cervix closed without uterine contractions with positive fetal cardiac activity, uterine height at 25 cm.

An emergency biological test revealed:

- Liver cytolysis: ALT 303 IU/L, AST 600 IU/L, and hyper bilirubinemia: total bilirubin 83.7 mg/l and direct bilirubin 93.7 mg/l, and a hemostasis disorder with a low prothrombin rate of 28%.

Table 1. Results-I

	PT%	HGB G/DL	PLATELETS ×10⁹/L	WBC ×10⁹/L	AST IU/L	ALT IU/L	GGT IU/l	ALP IU/L	LDH IU/L	DIRECT BILIRUBIN mg/dl	UREA mg/dl	CREATININE mg/dl	GLYCEMIA mg/dl	LIPASEMIA IU/L	PACO2 mmHg	CRP mg/dl
Day0	28	9.8	371	11	600	303	34	254		93.7	56	2.4	60	10		1.3
Day2	26	9.5	269	13	800	460	110	240		123,0	120	3.4	70			
Day4	22	8.6	145	13	1,514	461	217	208	703	156,0						9.2
Day7	19	4.6	134	22							90	2.9	60	13	50	

- Renal insufficiency: Urea 56 mg/dl; creatinine 2.4 mg/dl, hypoglycemia: 60 mg/dl, hemoglobin: 9.8 g/dl platelets: 371×10⁹/L, grouping: B negative, hepatitis B and C serology negative.

Diagnosis of AFLP was proposed, a request for blood and FFP (fresh frozen plasma) was sent to the transfusion center, and after correction of the hypoglycemia, the patient was quickly transferred to the operating room for extraction and maternal rescue under general anesthesia. The emergency caesarean section resulted in the delivery of a live female premature infant with Apgar score: 08/10, weight 1,400 g, who was admitted to the neonatal unit. The patient was subsequently transfused with two group B rhesus-negative packed red blood cells and five FFPs intraoperatively.

After stabilization, she was extubated in the operating room and admitted in the maternal intensive care unit (ICU). Abdominal ultrasound performed in the patient's bed showed homogeneous hepatosplenomegaly and dilatation of the intrahepatic bile ducts. The first days of her stay were marked by persistent bleeding notably metrorrhagia, requiring vaginal uterine revision for hemostasis and transfusion of two packed platelet, four packed red blood cells and 6 FFPs on the second day.

After transfusion of two packed red blood cells and six FFPs on the fourth day, despite hemodynamic stabilization and cessation of bleeding, the patient's neurological condition worsened with the onset of hepatic encephalopathy with increased jaundice and worsening of the biological work-up (**Table 1**), followed by hemodynamic instability necessitating mechanical ventilation and vasoactive drugs (noradrenaline and adrenaline in self-propelled syringes). A brain scan performed on day 6, in response to the appearance of anisocoria, revealed diffuse cerebral oedema associated with minimal meningeal bleeding. The patient also benefited from a plasmapheresis session on day 7. Thereafter, our patient's condition was unstable, and despite the efforts of the nursing team, she subsequently presented with bilateral reactive mydriasis and a positive hypercapnia test, followed by asystole, which was not recovered after cardiopulmonary resuscitation.

CLINICAL CASE II

Mrs. M. Z., a 27-year-old primiparous woman, with no particular pathological history, was referred to the gyneco-obstetric emergency department of the same hospital on 8 February 2022 at 10:00 PM for post-partum hemorrhage following a vaginal delivery in a birthing center in the Marrakech suburbs. During uterine revision, the midwife was unable to control the bleeding, which was slight but constant.

The interviewing revealed a history of nausea and vomiting in the ninth month of pregnancy. On clinical examination, the patient was conscious, hemodynamically and respiratory stable; blood pressure 120/80 mmHg; heart rate 90 beats/min; and no signs of pre-eclampsia were reported. Another examination revealed discrete jaundice, particularly in the conjunctivae, of abrupt onset, associated with pain on palpation of the right hypochondrium. The laboratory work-up revealed:

- ALT at 224 IU/L, AST at 400 IU/L, and hyper bilirubinemia: Direct bilirubin at 71 mg/l,
- A low prothrombin rate at 49%,
- Hypoglycemia at 70 mg/dl,
- Hemoglobin at 8.3 g/dl and thrombocytopenia at 42×10⁹/L,

with rhesus-positive blood group type O. the diagnosis of AFLP was proposed.

Following the correction of glycemia and the transfusion of two units of packed red blood cells, the patient underwent uterine revision in the surgical room, with administration of intravenous oxytocin. She was then admitted to the maternity intensive care unit, where she received four units of FFPs and one units of packed platelets by the second day. The evolution of our patient's condition was favorable, with progressive normalization of the biological balance (**Table 2**) and regression of the jaundice. On day 6 of hospitalization, the patient was transferred to the maternity department.

DISCUSSION

The pathophysiology of AFLP is not fully understood, but research in recent years suggests that it may result from mitochondrial dysfunction in most cases [4]. The onset of AFLP usually occurs during the third trimester and is characterized clinically by the onset of nausea, vomiting, abdominal pain, fatigue, moderate elevation of liver enzymes, significant coagulopathy, hypofibrinogenemia, hypoglycemia, and hyper bilirubinemia as well as jaundice

Table 2. Results-II

	PT%	HGB G/DL	PLATELETS ×10⁹/L	WBC ×10⁹/L	AST IU/L	ALT IU/L	GGT IU/l	ALP IU/L	DIRECT BILIRUBIN mg/dl	UREA mg/dl	CREATININE mg/dl	GLYCEMIA mg/dl	LIPASEMIA IU/L	CRP mg/dl
Day0	49	8.3	42	8	400	224	34	80	71	34	1.4	70	6	0.5
Day2	39	6.8	37	9	350	210	56	210	68	41	1.5	70		
Day5	55	8.9	145	11	167	187	39	120	52					2.3

with rapid progression to acute liver failure, More rarely, there is hepatica on palpation or even pruritus [5]. Liver biopsy remains the most effective means of confirming the diagnosis, but its invasive nature makes it difficult to apply and therefore the diagnosis is generally made by applying the Swansea criteria [6]. Hepatic ultrasound may show a hyperechoic liver, as in the two cases reported here, but may also be normal. A CT scan of the liver may be useful for the diagnosis of steatosis, showing a liver density equal to or less than that of the spleen; in this case, it is useful to repeat a CT scan a few days after delivery, then at a distance from delivery, for comparison [7].

Biological and radiological findings do not always correspond to the severity of the disease. Consequently, it is advisable to suspect the existence of AFLP when clinical signs appear, especially in the third trimester of pregnancy.

AFLP can have far-reaching repercussions for both mother and fetus. The main complication observed in AFLP is hepatocellular failure, although some women may also suffer from other problems such as ascites, pleural effusions, acute pancreatitis or respiratory and renal failure. Infections are common, as are vaginal hemorrhages, bleeding from Caesarean incisions and even disseminated intravascular coagulation (DIC).

Management of AFLP is based on three key steps to survival: Early diagnosis, rapid delivery and comprehensive care for the mother after delivery. The mother's postpartum outcome is strongly influenced by the speed of diagnosis; in particular, the time elapsed between the onset of the first symptoms and delivery [5].

CONCLUSIONS

As rare as it is, acute fatty liver of pregnancy remains a potentially fatal condition that develops around the third trimester of pregnancy. An obstetric emergency must be diagnosed as soon as possible. Recent studies have suggested that certain criteria, such as INR, platelets and bilirubin, may be more useful for prognosis, although further work is needed to determine the most specific and effective diagnostic parameters for prognosis, as well as the long-term effects on mother and fetus.

Ignorance of AFLP or confusion with HELLP syndrome by most healthcare professionals, particularly gynecologists and midwives, is a hurdle to early diagnosis and timely, appropriate management, reflecting the role and importance of continuing education.

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Ethics statement: The authors stated that, in accordance with the Helsinki Declaration, two women were selected, the protocol of study explained and informed consent was obtained. The Protocol has been approved by the Ethics Committee of the Provincial Health Department of Marrakech. For consent for publication for clinical case 1, the husband of the deceased patient gave his verbal consent to publication. For clinical case 2, the patient gave her verbal consent to publication, and we subsequently obtained her written and signed informed consent for publication.

Declaration of interest: No conflict of interest is declared by authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

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