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Research Article

## ACUTE PANCREATITIS AND PREGNANCY: RETROSPECTIVE STUDY OF 10 CASES

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### ABSTRACT

In this retrospective study we report the case of 10 pregnant women who presented with acute pancreatitis during their pregnancy.

Through this work, we report the experience of the visceral surgery department at the ARRAZI hospital in the management of acute pancreatitis during pregnancy, in order to specify the epidemiological characteristics of this association, to determinate the diagnostic criteria (positive diagnosis, serious diagnosis, etiological diagnosis), describe the methods of therapeutic management carried out in our training, and finally evaluate the maternal and fetal prognosis.

#### Key words:

Acute pancreatitis- pregnancy-  
Epidemiology- Etiopathogeny-  
Diagnosis- Prognosis-Treatment.

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## INTRODUCTION

The association of acute pancreatitis and pregnancy is rare but not exceptional. It usually occurs in a young, multiparous woman in the second or third part of pregnancy [1]. The diagnosis of acute pancreatitis during pregnancy is difficult, given the non-specificity of the symptoms and given that very often the pain and vomiting can be linked to the pregnancy itself, which can thus be responsible for the delay in the diagnosis.

The relationship between pancreatitis and the pregnancy process is not yet fully understood. Certainly, the state of pregnancy induces physiological changes which favor certain etiologies of acute pancreatitis. Indeed, lithiasis pathology and hyperlipidemia seem to occupy a large place in the etiopathogenic theories put forward [1].

The diagnostic process is confronted with several problems, on the one hand the clinical picture is nonspecific, on the other hand, radiological examinations, in particular abdominal CT, are contraindicated in the majority of pregnancy. The management is multidisciplinary.

Treatment of acute gestational pancreatitis is primarily symptomatic. Early diagnosis and adequate management of this pathology improve maternal-fetal morbidity and mortality. The maternal prognosis is generally good. Fetal complications

are dominated by the risk of preterm delivery and acute fetal distress [2,3].

## PATIENTS AND METHODS

It is a retrospective descriptive and analytical study including 10 pregnant patients, admitted for acute pancreatitis between January 2016 and December 2019 in the anesthesia and resuscitation department, and visceral surgery department of the ARRAZI hospital of the CHU MOHAMED VI Marrakech. We Included patients who presented with acute pancreatitis (AP) during a biologically and / or radiologically confirmed pregnancy. And excluded from this work: three patients who had postpartum AP, patients who have other visceral surgical emergencies and unusable files.

Anonymity and confidentiality were respected during data collection.

## RESULTS

During the study period, 10 patients were admitted for the management of pancreatitis associated with pregnancy. The average age was 26 years with an incidence of 1/6589. Acute pancreatitis occurred more frequently in multiparous multi-gestational patients (70%) in the third trimester (40%). For medical history; two patients had a history of acute pancreatitis

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during the same pregnancy, two others had gallbladder lithiasis and one was type 2 diabetic.

**Table 1** age, medical history and age of pregnancy of patients in our study

	Case n°1	Case n°2	Case n°3	Case n°4	Case n°5	Case n°6	Case n°7	Case n°8	Case n°9	Case n°10
Age	31y	24y	25 y	29 y	26 y	27 y	20 y	30 y	21 y	31 y
Medical history	lithiasis gallbladder	-	acute pancreatitis	acute pancreatitis	lithiasis gallbladder	-	-	diabetes	-	-
Gesture/parity	multiparous	multiparous	multiparous	multiparous	Primiparous	multiparous	Primiparous	multiparous	Primiparous	multiparous
age of pregnancy	T3	T2	T2	T2	T3	T3	T1	T2	T1	T3

The admission deadline is 48 hours. The clinical picture was dominated by abdominal pain (100%) and vomiting (80%). Half (50%) of patients have jaundice, and 50% of them were feverish.

Morphological analyzes were focused mainly on performing an abdominal and obstetric ultrasound in all of our patients: objecting that 10% had acute angiochlitis, 30% had acute cholecystitis, and 30% had simple gallbladder lithiasis, and one patient has pregnancy stopped at 16.

**Table 2** clinical picture of the different patients

	Case n°1	Case n°2	Case n°3	Case n°4	Case n°5	Case n°6	Case n°7	Case n°8	Case n°9	Case n°10
admission deadline	24H	48H	12H	24H	72H	48H	48H	72H	48H	72H
abdominal pain	+	+	+	+	+	+	+	+	+	+
vomiting	+	+	+	+	+	-	+	+	-	+
Transit disorder	diarrhea	-	-	-	diarrhea	-	diarrhea	AMG	-	-
fever	+	+	+	+	-	-	-	+	-	-
jaundice	+	-	-	-	-	-	+	-	-	-
hemodynamic failure	+	-	-	-	-	-	+	+	-	-

The positive diagnosis is based on lipasemia which was on average 19 times normal, the severity assessment was based on clinico-biological scores: SIRS Criteria (Systemic Inflammatory Response Syndrome), Ranson score and APACHE II score.

In our series, abdominal MRI was performed in 8 patients (80% of cases). We used the MRI-adapted CT score to stage pancreatitis. It is a score ranging from A to E depending on the pancreatic and peri-pancreatic inflammation and the amount and appearance of the necrosis flows.

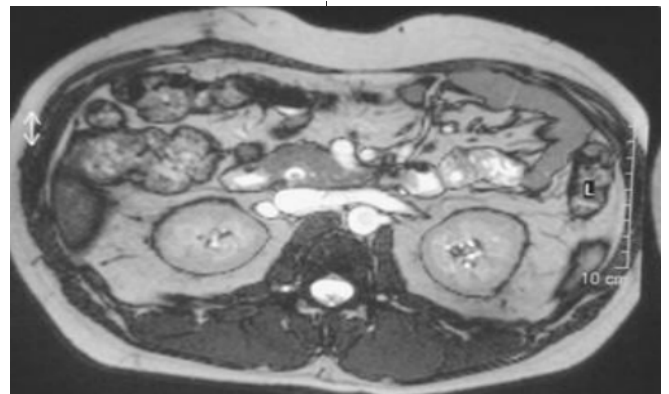
**Table 3** biological results and SIRS score

	Case n°1	Case n°2	Case n°3	Case n°4	Case n°5	Case n°6	Case n°7	Case n°8	Case n°9	Case n°10
lipasemia (U/L)	1006	2452	2902	2000	1200	894	493	186	902	252
anemia (Hb g/dL)	9	-	10	11	10	11	8	9	11	10
Hyperleukocytosis (GB/uL)	15890	-	12740	13200	10820	11.10 <sup>3</sup>	14870	17430	11.10 <sup>3</sup>	-
CRP (mg/L)	202	1,33	20	55,7	6	7,7	15	355	192	42
Transaminases	>3N	>3N	>3N	>3N	>3N	N	>3N	N	N	N
PAL/GGT	>4N	N	N	N	N	N	>4N	N	N	N
BT (mg/L)	42	8	7	4	10	5	27,4	11	10	8
LDH (U/L)	-	-	-	-	-	-	-	>250	-	-
Ca2+ (mg/L)	80	100	-	-	-	90	-	-	-	-
SIRS	3	1	2	2	0	0	2	3	0	0



**Figure 1** (L) Ultrasound image showing a distended thick-walled microlithiasis gallbladder.

(R) Ultrasound image of an enlarged pancreas in one of our patients



**Figure 2** MRI of the abdomen (thin axial T2-weighted slice) showing a calculus of the main bile duct

**Table 4** results Distribution of patients by extent of necrosis

Pancreaticnecrosis	Number of patients	Percentage
0	4	40%
<30%	01	10%
30-50%	01	10%
>50%	00	0%

**Table 5** results of radiological investigations.

	Case n°1	Case n°2	Case n°3	Case n°4	Case n°5	Case n°6	Case n°7	Case n°8	Case n°9	Case n°10
Abdominal ultrasound	angiochlitis	cholecystitis	cholecystitis	cholecystitis	simple gallbladder lithiasis	simple gallbladder lithiasis	simple gallbladder lithiasis	N	N	N
IRM (stades)	B	A	C	D	A	C	A	E	-	-
Etiology	lithiasis origin	lithiasis origin	lithiasis origin	lithiasis origin	lithiasis origin	lithiasis origin	lithiasis origin	idiopathic	idiopathic	preeclampsia

The therapeutic management of acute pancreatitis in the patients in our series was essentially based on symptomatic treatment, as well as on appropriate etiological treatment.

Hospitalization was the rule for all of our patients, or 100% of cases, including 3 patients (30%) were hospitalized in intensive care, while 7 patients were hospitalized in visceral surgery, or 70% of cases.

Put in condition; it was systematic in all patients admitted to intensive care. Hemodynamic management was based on: vascular filling which was necessary in all patients; recourse to noradrenalin (NA) was necessary in a patient who did not respond to filling; placing in a semi-seated position associated with oxygen therapy using a mask or oxygen glasses was carried out in all patients; correction of hydro-electrolyte disturbances with sodium, potassium and calcium intake according to the needs of each patient.

Pain management; all the patients had received class I (PARACETAMOL 1g every 6 hours) and / or class II (NEFOPAM) analgesic treatment according to the visual analogue scale. Antispasmodics were prescribed in 9 cases (90%), at a dose of 1 ampoule 3 times a day.

Stopping oral feeding was the rule for nutritional care, for all patients in our series, lasting 2 days on average with extremes ranging from 1 to 4 days. Thus, the patients had received parenteral nutrition during the period of discontinuation of the oral route. No patient had received feeding by feeding jejunostomy or naso-jejunal tube.

The administration of anti – H2 (ANTAGON) or PPI by the intravenous route for gastric protection has been reported in all of our patients (100%). All the patients in our work were put on preventive anticoagulation based on low molecular weight heparin at a dose of 4000IU / d subcutaneously.

Monitoring while waiting clinical and biological cooling was carried out by: Clinic (The general condition, T°, diuresis, abdominal examination, obstetric examination looking for signs of threatened preterm delivery), Biology (NFS, CRP) and Radiology (Abdominal and obstetric ultrasound).

Five patients had a cholecystectomy during their pregnancy; the other two patients were cholecystectomized at 2 months postpartum to avoid subsequent recurrence. Among the operated patients, three of them were approached by subcostal approach, and four by laparoscopy. The gesture was performed under general anesthesia. Systematic post-intervention tocolysis was prescribed in patients in the 3rd trimester (table 6).

**Table 6** Distribution of patients according to the time of cholecystectomy.

Time of intervention	Number of patients	Percentage %
1st trimester (T1)	1	10%
2nd trimester (T2)	3	30%
3rd trimestre (T3)	1	10%
Postpartum	2	20%

A per-endoscopic sphincterotomy, which allowed the evacuation of stones with lavage of the main bile duct, was performed in a single patient

The management of the preeclampsia patient had been based on the treatment of arterial hypertension with injectable nicardipine, magnesium sulfate. Etiologic treatment was based on fetal extraction at the age of 7 months.

For the course of acute pancreatitis; 20% of cases, had acute cholecystitis associated with pancreatitis in the 2nd trimester. One patient was hospitalized with acute pancreatitis associated with clinical and biological cholangitis. The superinfection of necrosis castings occurred in one patient during the 3rd trimester and a patient has died.

The abortion concerned a single pregnancy during the first three months, two premature deliveries were described and the two newborns had 32 and 36 weeks of amenorrhoea, respectively. Acute fetal distress was suspected in one patient in our series thanks to the RCF recording and who was managed by the neonatal team.

In our study, delivery by cesarean section was performed in 3 patients, one cesarean section due to severe acute pancreatitis, two other extractions by cesarean section, one for eclampsia attack and the other for fetal heart rhythm abnormality, while vaginal delivery was performed in 5 patients,

**Table 7** The course of acute pancreatitis in our study

	Case n°1	Case n°2	Case n°3	Case n°4	Case n°5	Case n°6	Case n°7	Case n°8	Case n°9	Case n°10
Maternal and fetal complications	cholangitis + Acute fetal distress	-	acute cholecystitis	acute cholecystitis + premature deliveries	-	-	abortion	superinfection of necrosis castings + death	-	premature deliveries
Delivery route	cesarean section	vaginal delivery	vaginal delivery	cesarean section	vaginal delivery	vaginal delivery	-	-	vaginal delivery	cesarean section

## DISCUSSION

The first case of acute gestational pancreatitis was described by SCMHITS in 1818 in a 30-year-old woman during her eighth pregnancy, and death occurred after a course of 4 months [4]

Acute pancreatitis remains a rare condition during pregnancy with an incidence of 1 in 1,000 to 3,000 pregnancies[5]

The incidence of the combination of acute pancreatitis and pregnancy is difficult to assess, sometimes over-rated if we are content of a biological diagnosis (1/3800 pregnancy), sometimes under estimated if only severe forms are taken into account (1/11467 pregnancy) [6]

Previously it was associated with a high fetal risk and maternal, but more recent studies have found a maternal mortality zero and only 0.57--4.7% of fetal mortality [7,8]

Multiparity, a body mass index (BMI) > or equal to 30 kg / m<sup>2</sup> before the onset of pregnancy, insulin resistance and elevated serum leptin levels are recognized factors of gallstones [5,9,10]

Combination of pregnancy and acute pancreatitis has a number of physiological and ethiopathogenic predispositions. At during pregnancy, bile secretion increases in quantity and quality: Triglyceride and cholesterol content [11]. Progesterone causes hypotonia of the gallbladder and hypertonicity of the oddi sphincter. All of these factors promote the occurrence of gallstones which is by far the most common etiology of pancreatitis acute in our study.

There appears to be a cause and effect relationship between acute pancreatitis and severe illness. Several theories are evoked: lithiasis [11, 12], mechanical (compression of the pancreatic ducts by the pregnant uterus) [11, 13], secretory [13], metabolic (14, 16) (hypertriglyceridemia), endocrine [11,13], (hyperparathyroidism), vasomotor [11, 12], (preeclampsia, retroplacental hematoma), and medicinal [10, 11,12], (diuretics, cyclines).

The age of onset does not present any particularities in apart from a frequency peak in the 3rd decade. Pancreatitis is rare in the 1st and 2nd trimester (12%), while it is common in the 3rd trimester (50%) and post partum (37%).

The positive diagnosis is difficult because the symptomatology clinical is misleading and nonspecific, and the examination is embarrassed by the pregnant uterus. And based on the presence of at least 2 out of 3 criteria confirm the diagnosis of acute pancreatitis: abdominal pain often sudden transfixing epigastric, radiating into the right shoulder or in both hypochondria, lipasemia > 3N. The rest of the biological assessment (urea, glycemia, calcemia, etc.) is especially important for prognosis [14]

The abdominal ultrasound, which is certainly harmless to the fetus, should look for enlargement of the pancreas, extra pancreatic necrosis flows and possible gallstones.

However, CT has a sensitivity and specificity close to 100%, not only does it make it possible to diagnose pancreatitis but it also allows it to be staged, but it is irradiating it can only be used beyond 36SA and postpartum, and therefore abdominal MRI when it is available is of interest in the 1st and 2nd trimester.

Medical treatment is the same as for pancreatitis outside of pregnancy: fasting, parenteral nutrition, and pain treatment.

On the other hand, the specific treatment of pancreatitis secondary to gallstone disease presents a real problem of management, because on the one hand we must consider the high rate of recurrences during pregnancy estimated at 70% versus 20 to 30% in the general population And on the other hand the management must consider both the maternal risk which depends on the anatomical type of the pancreatitis and

the gestational age of onset, and the fetal risk which depends on the severity of the clinical picture, this risk is represented by abortion, acute fetal distress and fetal death in utero which is estimated at 15-25% [14]

If the acute pancreatitis is moderate and preferably occurring in the 2nd trimester of pregnancy, cholecystectomy after 48 hours of hospitalization (even if the pancreatic enzymes are still elevated and pain present) is preferred over conservative treatment because, in case of medical treatment alone, the rate of recurrence of acute pancreatitis during pregnancy is approaching of the 50% [15].

According to several authors, cholecystectomy very early prevents recurrence of pancreatitis acute, does not increase the risk of perioperative complications, or intraoperative difficulty and induces length of hospital stay similar to medical treatment conservative [16,17]. Several authors suggest that the laparoscopy in the 1st, as well as in the 3rd trimester of pregnancy is achievable without increased fetal morbidity [18-19].

In case of severe acute pancreatitis of origin biliary, early retrograde cholangiopancreatography ± sphincterotomy is the treatment of choice. We will add treatment for local secondary infections (abscesses, necrosis casting infection) through percutaneous drainage even surgical treatment by laparotomy if necessary. Cholecystectomy will be postponed until postpartum or performed at the same operating time if a laparotomy should be considered to treat complications.

The moderate forms of acute pancreatitis that respond to medical treatment are associated with an excellent maternal prognosis, The main risk factor for mortality maternal infection is necrosis, In the literature, acute pancreatitis non-biliary are associated with a risk of complications maternal and fetal increased [20,21]. However, several authors have shown that acute pancreatitis during of pregnancy was associated with a risk of childbirth premature birth, MFIU and first trimester spontaneous abortions Currently and thanks to the reduction in diagnostic times and thanks to the progress of neonatal resuscitation, mortality is currently significantly lower.

## CONCLUSION

Pregnancy is not a cause of acute pancreatitis but changes the proportion of different etiologies. The earliness of the diagnosis, by enzymatic assays (lipase) makes it possible to quickly carry out a multidisciplinary care adapted to the patient whose consent must be obtained after her information. Advances in diagnostic and therapeutic methods have improved both maternal and fetal prognosis.

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