

# Hyperechoic amniotic fluid in a term pregnancy

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### ABSTRACT

The presence of highly echogenic amniotic fluid (AF) is uncommon, and presence creates a dilemma in the mind of the clinician. Echogenic AF has been attributed to meconium, blood, and vernix caseosa. Many studies have shown that the presence of meconium is unlikely in most cases. We report a case of highly echogenic AF detected at 37 weeks which was managed conservatively with careful fetal monitoring for further 2 weeks expecting spontaneous onset of labor. Labor was induced due to reduced fetal movements at 39 weeks. Healthy baby weighing 3130 g was delivered by cesarean section after a failed induction with prostaglandin.

**Keywords:** Amniotic fluid, hyperechoic, liquor, meconium, term pregnancy

### Introduction

Amniotic fluid (AF) is the liquid that surrounds a developing fetus in the amniotic sac and is usually clear to pale yellow in color. AF composition is complex with many maternal and fetal constituents. The composition of the AF changes with the gestational age with an average pH of 7.2 and specific gravity of 1.0069–1.008.<sup>[1]</sup>

Echogenicity of AF indirectly represents the size, number, and distribution of particles in AF and in turn turbidity of AF. This could give rise to ultrasound detection of echogenic particles, also known as AF sludge or appearance of a homogeneously echogenic AF.<sup>[2]</sup> AF “sludge” is dense aggregates of particulate matter. In the first and second-trimester ultrasound imaging, the presence of such particulate matter in AF is seen in approximately 4%.<sup>[2]</sup> It is associated with intraamniotic bleeding and the acrania–anencephaly sequence<sup>[3]</sup> and also observed in women with higher concentrations of maternal serum alpha-fetoprotein.<sup>[4]</sup> By the third trimester, the incidence rises to

about 80%<sup>[2]</sup> and have been mainly attributed to the presence of vernix caseosa and/or meconium.<sup>[2,5]</sup> Vernix caseosa is a complex fatty substance derived from the desquamated epithelial cells and sebaceous material.<sup>[6]</sup>

Congenital conditions associated with particulate matter in the AF include harlequin ichthyosis and epidermolysis bullosa letalis.<sup>[2]</sup>

Homogeneously, echogenic AF is due to the presence of innumerable echogenic particles in the fluid and is an uncommon finding. In most cases this is due to the presence of vernix caseosa in AF, however, in minority of cases, this could be due to meconium.<sup>[5,7-9]</sup>

### Case Report

A 34-year-old primigravida was detected to have hyperechoic AF in a routine growth scan at 37 weeks of gestation [Figure 1]. She had an uncomplicated antenatal period. The fetal growth was satisfactory, and AF Index and the umbilical artery blood flow indices were within the normal range. Fetal movements were satisfactory, and cardiotocography was normal. In the absence

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**Figure 1:** Ultrasound scan appearance of amniotic fluid

of further complication pregnancy was continued expecting spontaneous onset of labor.

AF remained hyperechoic, and induction of labor was done at 39 weeks using one cycle of prostaglandins since the patient complained of reduced fetal movements. The cervix was not favorable for induction and the second cycle of prostaglandin was declined by patient and a cesarean section was performed. Healthy baby boy weighing 3130 g was delivered with normal Apgar scores at 5 and 10 min. The AF at delivery was turbid in appearance [Figure 2]. Microscopic evaluation of the AF revealed vernix and the culture was negative.

## Discussion

This case report documents hyperechogenic AF detected on ultrasound in the late third trimester without any adverse effect in the neonate. Hyperechogenic AF was detected at 37 weeks, and the pregnancy was managed conservatively with careful monitoring until 39 weeks. Induction of labor was attempted in view of reduced fetal movements. Hyperechogenic AF is an uncommon finding that is commonly due to the presence of vernix, though in some cases, it is associated with the presence of meconium or blood creating a dilemma for management of these patients.<sup>[7-10]</sup>

Review by Sepúlveda and Quiroz indicated that the finding of hyperechoic AF refers more often to a considerable amount of vernix rather than meconium.<sup>[10]</sup> However, they suggested amniocentesis or amnioscopy to rule out the presence of meconium.<sup>[10]</sup>

A retrospective study by Brown *et al.* described that very echogenic AF during the third trimester as an unreliable indicator of meconium or blood in AF.<sup>[9]</sup> Nineteen such cases were investigated with amniocentesis. One case of meconium (5%) was detected and the remaining 95% had vernix.<sup>[9]</sup> Similarly, Petrikovsky *et al.* prospectively studied 19 cases of twin



**Figure 2:** Amniotic fluid appearance at cesarean section

pregnancies, each with one amniotic sac containing echogenic AF and the other containing anechoic AF.<sup>[7]</sup> Only one case (5%) of meconium detected in the echogenic group compared to 4 (21%) in the anechoic group.<sup>[7]</sup> Further, a prospective study by Sherer *et al.* concluded that hyperechoic AF had sensitivity of 100%, a specificity of 69% and a positive predictive value of 10%, and a negative predictive value of 100% to detect meconium in AF.<sup>[8]</sup> However, we have serious concerns regarding the methodology of this study.

In the initial reports, where echogenic amniotic fluid had been diagnosed by ultrasonography, further evaluation by amniocentesis or amnioscopy was recommended.<sup>[10]</sup> Amniocentesis is also not without risk, as it may give rise to infections and induce labor or result in miscarriage. It should be noted that ultrasonography cannot reliably differentiate meconium in AF from other causes of hyper-echogenicity. If meconium could have been reliably identified prenatally, then it may have a significant impact on the neonatal outcome. Recent studies and case reports reveal that ultrasonic finding of a echogenic AF at term in a normal pregnancy has no significant association with meconium and adverse pregnancy outcomes.<sup>[5,7-9]</sup> Therefore, a change in the management of pregnancy cannot be justified simply due to detection of hyper-echogenic AF.

In the index case, hyperechogenicity of AF was due to the presence of vernix. When the clinical, nonstress test and biophysical profiles are reassuring, the mere presence of hyperechogenic AF in ultrasound imaging cannot be considered as a marker of meconium and fetal distress. Therefore, this case also emphasizes that routine prenatal management of pregnancy should not be altered in the mere presence of hyperechogenic AF.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and

due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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