

Gross pericardial effusion with tamponade in 2nd trimester of pregnancy

Case Report

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Abstract: Hypothyroidism in pregnancy is associated with serious maternal and fetal risk. Rarely, it is manifested by life-threatening cardiac complications, such as gross pericardial effusion and tamponade. We present a case of successfully treated gross pericardial effusion and tamponade in a 22-week pregnant woman with hypothyroidism. The patient was treated by pericardial drainage with further treatment of hypothyroidism with levothyroxine. During the follow-up pregnancy was uncomplicated without recurrence of pericardial effusion and successful delivery of full-term baby. We conclude that careful monitoring of thyroid functional tests and proper management should be performed in pregnant women with hypothyroidism to prevent cardiac complications of the disease, like pericardial effusion and tamponade.

Keywords: *Pregnancy • Pericardial tamponade • Hypothyroidism*

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1. Introduction

Prevalence of hypothyroidism during pregnancy has been reported to vary between 2.5- 3% [1], posing serious maternal and fetal risk, including impairments of cognitive development of fetus and increased fetal mortality [2,3]. Hypothyroidism, though rarely, may be manifested by serious cardiac complications, such as gross pericardial effusion and tamponade [4]. Pericardial diseases of various etiologies also occur sporadically in pregnant women [5].

We present the case of a successfully treated gross pericardial effusion and tamponade in a 22-week pregnant woman with hypothyroidism.

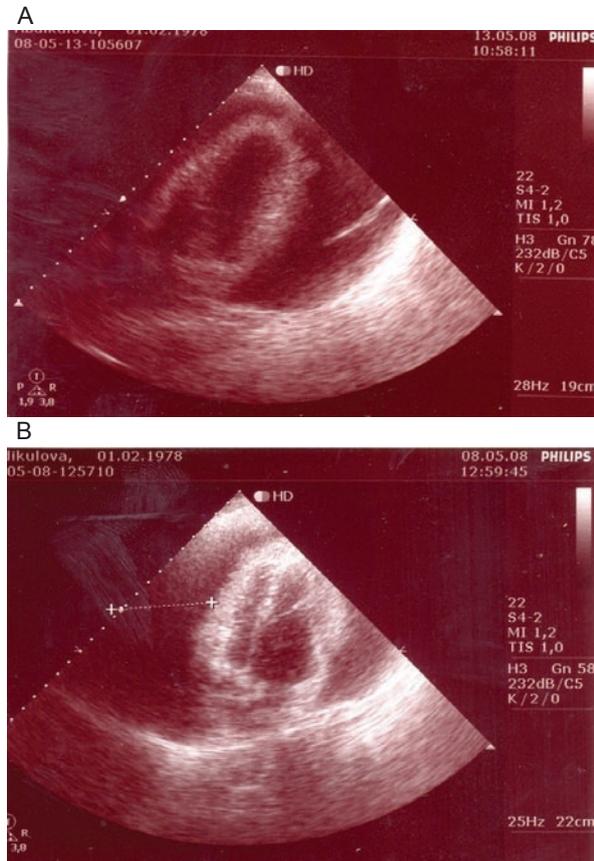
2. Case Report

A 30-year-old woman was referred to our clinic with complaints of dyspnea and cough, worsened at minimal exertion and supine position, palpitations and leg edema. Patient had a history of pituitary adenomectomy

at the age of 19 years, and hypothyroidism. She had complaints regarding weakness after operation, however, she had not taken the prescribed thyroxine therapy consistently and was non-compliant to treatment. Since 1999, the patient had a history of five pregnancies; all five resulted as a miscarriage. Upon admission, the patient was in the her second trimester of pregnancy – 22 weeks. Physical examination revealed that patient had orthopnea, her blood pressure was 90/80 mm Hg, heart rate 110 beats/min, and heart sounds were barely load. Her abdomen was enlarged due to pregnancy. The complete blood count analysis was as follows: hemoglobin – 10.6 g/dL; hematocrit – 32%; red blood cells- 3.39×10^6 cells/mcL; white blood cells – 7.8×10^3 cells/mcL; lymphocytes – 8%, eosinophils 3%; monocytes -9%, neutrophils - 80%; and, sedimentation rate of 39 mm/hour. The biochemistry analysis showed that the serum total protein was 7.7 g/dL, urea nitrogen – 12 mg/dL, creatinine – 0.8 mg/dL, total bilirubin – 0.5 mg/dL, direct bilirubin- 0 mg/dL and indirect bilirubin - 0.5 mg/dL. Her thyroid stimulating hormone level (TSH) was 0.2 mIU/l (normal laboratory values 0.6-3.8 mIU/l), and total thyroxine level was 64 nmol/L (normal

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Figure 1. Four-chamber (A) and two-chamber (B) apical echocardiographic views of gross pericardial effusion with fibrin adhesions in a 30-year old pregnant woman with hypothyroidism.



laboratory values 62-141 nmol/L). The urine analysis was unremarkable with no signs of proteinuria. The electrocardiogram showed low voltage in all derivations, sinus tachycardia, heart rate – 107 beats/min, moderate right axis deviation, right atrial overload, and diffuse negative T waves. Echocardiography revealed otherwise normal valves, the left ventricular (LV) end-diastolic diameter was 3.7 cm, right ventricular (RV) – 2.3 cm, left atrium of 2.36 cm, LV ejection fraction of 61% and mean pulmonary artery pressure of 27 mm Hg. There was a paradoxical movement of interventricular septum, diastolic collapse of RV free wall and right atrium. There was a gross amount of fluid in the pericardium: behind LV posterior wall – 6.3 cm, apex – 8.0 cm, RV anterior wall – 3.8 cm (Figure 1). Epicardial fibrin adhesions were also detected.

Ultrasound examination revealed apparent normal active fetus in uterine cavity at a longitudinal position. Fetal heart rate – 159 beats/min, biparietal diameter – 5 cm, femur length – 3.6 cm, abdominal circumference – 16.9 cm, estimated fetal weight – 550 g. The internal organs and brain structures of the fetus were without

pathology. Placenta was 28 mm in thickness and was localized along the posterior wall. There was a moderate increase in amniotic fluid volume. The estimated gestational age was 22 weeks.

The patient underwent emergency subcutaneous catheter drainage of pericardium and overall 4200 ml of serous fluid was removed during 72 hours of drainage. The analysis of fluid did not reveal signs of malignancy or infection. The patient's symptoms were relieved. Control echocardiography revealed only 0.3 cm of fluid behind LV posterior wall.

The patient was consulted by an endocrinologist and an obstetrician. The following medications were prescribed levothyroxine at 175 mkg daily, and vitamin supplements containing iron and folic acid which were recommended to take apart of levothyroxine. The patient was referred for obstetricians and endocrinologists care. The analysis of thyroid antibodies for autoimmune thyroiditis and additional hormones tests work-up, magnetic resonance imaging of brain structures after labour were arranged, since low values of TSH and normal values of thyroxine levels, history of pituitary surgery did not exclude central hypothyroidism [6]. Control echocardiographic examinations performed after patient discharge from hospital revealed no signs of fluid accumulation in pericardium. The pregnancy course was uneventful during follow-up and patient delivered normal term otherwise healthy baby.

3. Discussion

Cardiac tamponade in pregnant women have been associated with pericardial involvement in scleroderma, neoplastic disease, trauma and aortic dissection [5,7-9]. The recommended treatment of cardiac tamponade does not differ from those applied in general cases, including, drainage of fluid, pericardiocentesis, and treatment of underlying disease [5].

In our case, cardiac tamponade developed in a patient with hypothyroidism, non-compliant with thyroid modulating treatment. Hypothyroidism in pregnancy is associated with miscarriages, maternal and fetal risk [1-3]. The physiologic increase in requirements for thyroid hormones in first trimester of pregnancy to supply the fetus needs dictates close monitoring of thyroid hormone levels, especially, in patients with hypothyroidism [1,10]. It is recommended that these should be treated with levothyroxine, known to be safe for fetus and mother, at higher doses than before pregnancy beginning from the week the pregnancy is confirmed, under control of thyroid tests, [1,6,10].

This patient, non-compliant for treatment of hypothyroidism, resulted in multiple miscarriages. Furthermore, the last successful conception and pregnancy was complicated by the development of pericardial effusion and cardiac tamponade. The emergent drainage of pericardial content with further treatment of hypothyroidism with levothyroxine in our patient resulted in acute relief of pericardial tamponade without recurrence, further uncomplicated course of pregnancy and successful delivery of healthy baby.

References

- [1] Glinoe D, Abalovich M. Unresolved questions in managing hypothyroidism during pregnancy. *BMJ* 2007; 335: 300-2
- [2] Bakimer R, Cohen JR, Shoenfeld Y. What really happens to fecundity in autoimmune diseases? *Immunol Allergy Clin North Am* 1994; 14:701–23
- [3] Pop VJ, Kuijpers JL, van Baar AL, Verkerk G, van Son MM, de Vijlder JJ, Vulmsa T, et al. Low maternal free thyroxine concentrations during early pregnancy are associated with impaired psychomotor development in infancy. *Clin Endocrinol (Oxf)* 1999; 50: 149-55
- [4] Spodick DH. Pericardial diseases. In: Braunwald E, Zipes DP, Libby P, editors. *Heart disease*. 6th ed. Philadelphia, London, Toronto, Montreal, Sydney, Tokyo: W.B. Saunders; 2001. p. 1823–76
- [5] Ristić AD, Seferović PM, Ljubić A, Jovanović I, Ristić G, Pankuweit S, et al. Pericardial disease in pregnancy. *Herz* 2003; 28: 209-15
- [6] Lania A, Persani L, Beck-Peccoz P. Central hypothyroidism. *Pituitary* 2008; 11: 181-6
- [7] Allali F, Alami M, Doghmi N, Mohatane A, Benomar M, Hajjaj-Hassouni N. Scleroderma complicated with tamponade during pregnancy. *Joint Bone Spine* 2005; 72: 341-3
- [8] Azimi NA, Selter JG, Abott JD, Cabin HS, Hutner A, Copel J, Setaro JF. Angiosarcoma in a pregnant woman presenting with pericardial tamponade--a case report and review of the literature. *Angiology* 2006; 57: 251-7
- [9] Byhahn C, Bingold TM, Zwissler B, Maier M, Walcher F. Prehospital ultrasound detects pericardial tamponade in a pregnant victim of stabbing assault. *Resuscitation* 2008; 76: 146-8
- [10] Alexander EK, Marqusee E, Lawrence J, Jarolim P, Fischer GA, Larsen PR. Timing and magnitude of increases in levothyroxine requirements during pregnancy in women with hypothyroidism. *N Engl J Med* 2004; 351: 241-9

4. Conclusion

Careful monitoring of thyroid functional tests and proper management should be performed in pregnant women with hypothyroidism to prevent cardiac complications of the disease, like pericardial effusion and tamponade.