




Giant cardiac cavernous haemangioma of the right atrium in a newborn successfully managed using combined therapy

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Brief Report

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Abstract

Cardiac tumours are extremely rare. Most of the cases are diagnosed post-mortem.

In this case, a tumour was found in a neonate during routine ultrasound screening in the first trimester of pregnancy. After birth, resection of the formation was performed and histologically confirmed as a cavernous haemangioma. Additionally, propranolol was prescribed in order to prevent relapse.

Cardiac tumours are so rare that most of the cases are diagnosed post-mortem, with an incidence of 0.0017–0.27% at autopsy. Among these instances, cardiac haemangiomas are uncommon and found in only 1–2% of cases.¹ However, rhabdomyoma is the most common tumour of childhood in autopsy series.²

We report the case of an infant who had a right atrial tumour diagnosed on ultrasound screening in the first trimester of pregnancy. In this instance, we managed to prolong the pregnancy and remove the cardiac tumour on the 20th day of life. Subsequently, after receiving the results of a histological examination, we used propranolol.

Case report

A fetal tumour was detected during a routine ultrasound screening in the first trimester of pregnancy. This allowed for early monitoring of the tumour's growth and development through fetal echocardiography at various stages of gestation.

It was located in the posterior wall of the right atrium. In dynamics, an increase in the size of the tumour was revealed by fetal echocardiography (Fig 1), indicating that the tumour was growing and potentially could cause complications during delivery or after birth since caesarean section was performed in the 38th week of gestation. The infant later developed atrial flutter with a heart rate of 275 beats per minute, which was successfully restored by electric impulse cardioversion. Subsequently, the patient underwent surgery to remove the mass.

Tumour resection was performed. A small part of the tumour tissue was left in the area of the sinus node, due to the high risk of damage to the latter (Fig 2). Histopathological exam conclusion was cavernous haemangioma (Fig 1).

In order to prevent the recurrence of the cavernous haemangioma, it was decided to prescribe propranolol at a dosage of 1 mg/kg/day three times per day.

After two years of observation, it was observed that the haemangioma residue had not enlarged (Fig 2), and the main rhythm was sinus.

Discussion

Cardiac haemangiomas are composed of a benign proliferation of endothelial cells that are histologically identical to haemangiomas elsewhere in the body. Cardiac haemangiomas can arise anywhere in the heart and have been found in both ventricles, in both atria, on the epicardial surface, and in the pericardium.³

Histologic patterns that have been described include capillary haemangiomas, cavernous haemangiomas, hemangioendotheliomas, and intramuscular haemangiomas.⁴

The early detection and monitoring of the tumour through fetal echocardiography were critical to the successful management of the condition. It highlights the importance of routine prenatal care and specialised fetal imaging in the detection and the significance of a multidisciplinary approach, as well as the need for timely surgical intervention to ensure the best possible outcomes for both the mother and the baby.

Commonly, propranolol is used in the treatment of skin haemangiomas. Propranolol is a beta-blocker that works by reducing the blood flow to the tumour and shrinking it over time.⁵

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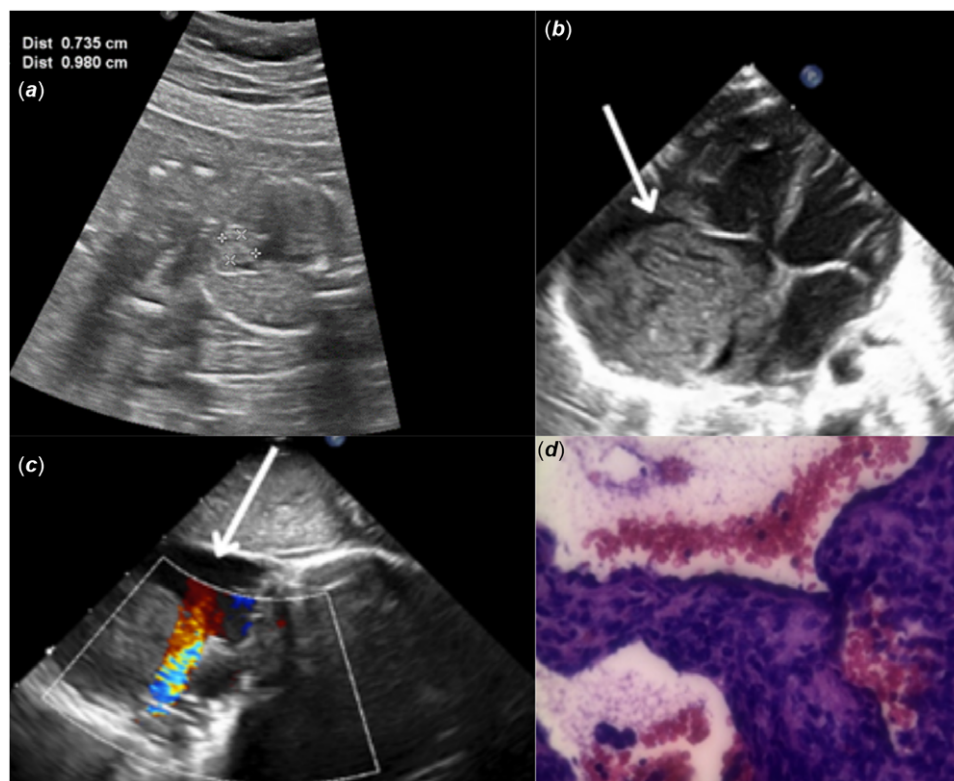


Figure 1. (a) Fetal echo at 19 weeks of gestation. (b) Transthoracic echocardiography after birth. Arrow depicts a giant tumour mass, which is entitled the whole cavity of the right atrium. (c) Transthoracic echocardiography after birth. Arrow depicts turbulent flow in SVC. (d) Microscopic view of tumour demonstrating proliferation of enlarged vessels filled with blood.

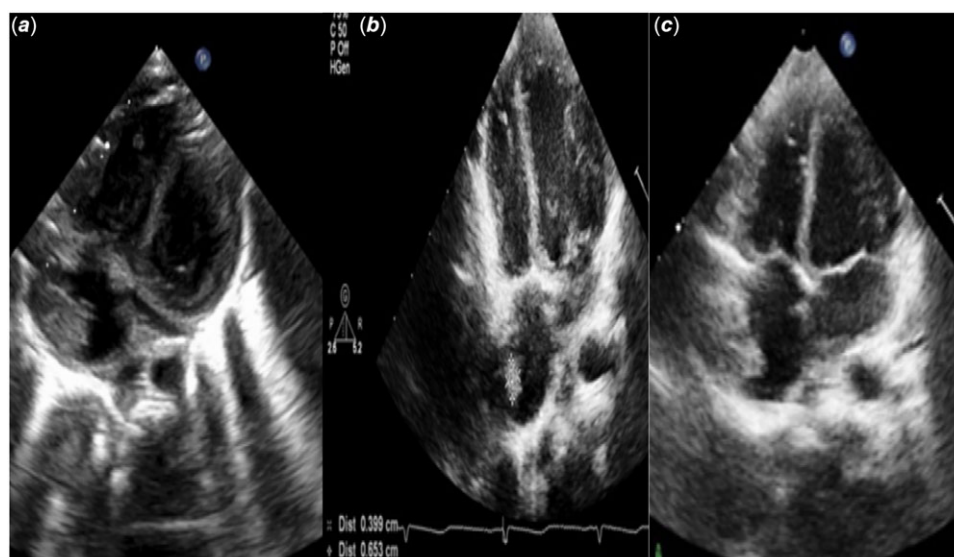


Figure 2. (a) Transthoracic echocardiography after procedure with remaining small tumour. (b) Remaining haemangioma with measure 1,01 × 1,56 cm after one month. (c) After two years of surgery resection, reduced in size tumour.

However, there are limited data on the use of propranolol specifically for the management of cardiac cavernous haemangiomas, and even less information about combined treatment.

The combination of surgical resection and propranolol treatment can be an effective approach in the management of cardiac cavernous haemangiomas.

This is the first case in our experience that describes the use of a combination treatment approach involving both tumour resection and propranolol for this condition.

Conclusion

When a child's life is at stake after birth, combined therapy is important, and histology is essential for the final diagnosis. To reduce the risk of recurrence, it is crucial to periodically monitor the patient.

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Competing interests. None.

Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national guidelines on human experimentation (Republic of Kazakhstan) and with the Helsinki

Declaration of 1975, as revised in 2008, and has been approved by the Local Bioethics Committee of National Research Cardiac Surgery Center.

References

1. Chen X, Lodge AJ, Dibernardo LR, Milano CA. Surgical treatment of a cavernous haemangioma of the heart. *Eur J Cardiothorac Surg* 2012; 41: 1182–1183.
2. Burke A, Virmani R. Atlas of Tumor Pathology. Tumors of the Heart and Great Vessels. Armed Forces Institute of Pathology, Washington DC, 1996.
3. Kojima S, Sumiyoshi M, Suwa S, et al. Cardiac hemangioma: a report of two cases and review of the literature. *Heart Vessels* 2003; 18: 153e6–6.
4. McAllister HA, Fenoglio JJ Jr. Tumors of the cardiovascular system. In: Firminger HI (eds). 2nd series, Atlas of tumor pathology, Fascicle 15. Armed Forces Institute of Pathology, Washington DC, 1978: 1e3 [46e51].
5. Kunzi-Rapp K. Topical propranolol therapy for infantile hemangiomas. *Pediatr Dermatol* 2012; 29: 154–159. DOI: [10.1111/j.1525-1470.2011.01615.x](https://doi.org/10.1111/j.1525-1470.2011.01615.x).