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Case Report

Late manifestation of heart failure in pregnant woman who was treated in the adolescent period for Hodgkin lymphoma

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Cardiovascular diseases are the leading cause of mortality in patients who were treated in childhood with chemotherapy and radiation therapy.1 The survival rate improved over the past decades in pediatric oncology patients2 and the follow-up is strongly suggested in those individuals.3,4 The maternal risk from the cardiovascular toxicity is unknown.5

We present a case of a 32-year old pregnant woman who is in the 26 gestational week who was admitted to the intensive care unit because she had symptoms and signs of heart failure. For the last five days she has bronchopneumonia. We learned from her previous history that she was treated with six cures of ABVD when she was 16 years old because of Hodgkin lymphoma and also with radiation therapy for three more years, with unknown dosage. She is on therapy with levothyroxine, she has hypothyroidism and polycystic ovaries. On the admission she is afebrile, her heart rate is regular 110 beat per minute with mild systolic murmur, hypertensive 160/90 mmHg. She has swelling of the right hand. The chest X-ray revealed bilaterally large pleural effusion. Echocardiography showed an enlarged left ventricle with impaired ejection function (LVEF) 30%, moderate aortic and mitral regurgitation and a small pericardial effusion. Fetal echocardiography registered 140 beat per minute of the fetuses heart. Laboratory analysis showed increased serum blood urea, hipoproteinaemia with hypoalbuminemia, increased white blood count with neutrophilia. The NTproBMB level was highly elevated. She was monitored via central venous catheter and the pleural effusion was bilaterally drained. The arterial line was provided via the femoral artery and the diuresis was measured all the time. There was an elevated central venous pressure (CVP 13 mmHg) and elevated capillary wedge pressure (PCWP 23 mmHg) with decreased cardiac index (CI 3,4 l/min/m2) – all these pointed to heart failure. Thyroid gland hormones were in normal referent values. In 24 hour urine there were proteins 2,7g. Beside antibiotics, according to the Guidelines, the therapy for the heart failure and hypertension was administered. She was taking the following: Methyldopa a 250mg 3 x 1 tbl., Nifedipin a 20mg 2 x 1 tbl., Bisoprolol a 2,5mg 1 x 1 amp., Furosemid a 20mg 3 x I i.v. tbl., Spironolakton a 25mg 1 x 1, Inf. Urapidil up to 20 mcg/min inf. Nitroglicerin up to 40 mcg/min, amp. Levofloxacin a 750mg i.v.

There were no signs of improvement and hemodynamic parameters worsened until the fourth hospitalization day: CVP was 16 mmHg, PCWP was 29 mmHg and CI worsened to 2,7 l/min/m2. That day fetal echo did not registered the baby´s heart beats. An urgent Cesarian section was carried out by a team of gynecologists, cardiologists and cardiac surgeons after witch the medication therapy was continued, ACE inhibitors were introduced. After the delivery symptoms and signs of heart failure improved, her blood pressure normalized. The parameters which were followed up by central venous catheter normalized and she was dismissed from the hospital on the 16th day. The last check-up was done by her cardiologist 2 years later; according his report her blood pressure is normal on propranolol and her LVEF is 60%.

Discussion

There are not much published cases on pregnant women who had lymphoma in their childhood. Pre-eclampsia and dilated cardiomyopathy in pregnant women treated previously in adolescent period of Hodgkin lymphoma- as far as we know- is a scare literature data. Is the cardio toxicity effect of the chemotherapy with the radiation side by side made her hypothyreotic and such an endocrinologic disbalance - which worsened by hypertension in pregnancy- are all interacted and lead this women into such clinical entity with dilated cardiomyopathy? We belive, that the pregnancy is not the only important risk factor in this case, but it is the case of late manifestation of the heart failure which can be explained by the cardio toxicity and radiation effect of the adolescent Hodgkin therapy which was not taken seriously and was not followed up regularly during all these years. The ABVD protocol which contains Adriamycin- which she was treated with 15 years ago- can have a late manifestation of heart failure, after a period of time. The pediatric population is in high risk of adriamycin cardio toxicity and it is known, that the late chemother-

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apy effect in some lymphomas can be expected seven or even more years after the administration of the chemotherapy.[6] The radiation affects all structural and functional components of the heart including pericardium, myocardium, heart valves, conduction system and coronary arteries[7,8], so valvular regurgitation and left ventricular enlargement can be explained, and even should have been expected in our patient. In this case among other risk factors for the heart failure were: femal sex, hypotension, adolescent period when the chemo- and radiation therapy were administered.[9] The radiation therapy can harm the thyroid gland which manifests as hypotireosis. In this case, the hypertension has its etiology deeply based not only in pregnancy but with her previous hemo- and radiation therapy which probably affected the thyroid gland, too. The risk from acute heart failure even in individuals with subclinical form who were treated with adriamycin in the adolescent age will be increased during pregnancy, due to the hypervolemic stage. Pregnancy could be a potential trigger for symptoms and signs of heart failure in such patients, so these individuals should have been followed up regularly during the pregnancy, even the echocardiography is within normal limits. Unfortunately, our patient had no cardiology consultation after the oncology treatment was over.[10] Today, there are many non-invasive imaging modalities for the diagnoses and the follow-up of the cardio toxicity effect after the oncology treatment. The simplest and most important is echocardiography with its serial check-ups. It is the most widely used method with for the estimation of the morphology and function of the heart with parameters as EFLV and global longitudinal strain. Biomarkers are also in focus of interest of the field of cardiac oncology.[13,14] Before, and during the pregnancy the thyroid hormone levels should be perfectly normalized. Hypertension should be followed up before, during and after the pregnancy.[11,12]

Cardiac oncology is a multidisciplinary branch of the internal medicine which is important for the increasing number of oncology patients with cardiovascular complications. It is important not only for the prevention or during the treatment but it has its important role in the follow-up especially in the young patients, even without obvious cardiovascular complications. Cardiac oncologists will have an important advisory role in the pregnancy care system.[15] According to this case and previous study reports, there are cumulating evidence that in patients who suffered cancer and were treated by chemo and radiation therapy in their childhood, should undergo lifelong screening examinations to prevent cardiovascular morbidity and mortality.[9]

References

1. Tukenova M, Guibout C, Oberlin O, Doyon F, Mousannif A, Haddy N, Guerin S, Pacquement H, Aouba A, Hawkins M, Winter D, Bourhis J, Lefkopoulos D, Diallo I, de Vathaire F. Role of cancer treatment in long-term overall and cardiovascular mortality after childhood cancer. J Clin Oncol 2010; 28:1308–1315.
2. Siegel R, Ward E, Brawley O, Jemal A. Cancer statistics, 2011: the impact of eliminating socioeconomic and racial disparities on premature cancer deaths. CA Cancer J Clin. 2011; 61:212–236.
3. Armenian SH, Hudson MM, Mulder RL, Chen MH, Constine LS, Dwyer M, Nathan PC, Tissing WJ, Shankar S, Sieswerda E, Skinner R, Steinberger J, van Dalen EC, van der Pal H, Wallace WH, Levitt G, Kremer LC, International Late Effects of Childhood Cancer Guideline Harmonization Group. Recommendations for cardiomyopathy surveillance for survivors of childhood cancer: a report from the International Late Effects of Childhood Cancer Guideline Harmonization Group. Lancet Oncol 2015; 16:e123–136.
4. Armstrong GT, Plana JC, Zhang N, Srivastava D, Green DM, Ness KK, Daniel Donovan F, Metzger ML, Arevalo A, Durand JB, Joshi V, Hudson MM, Robison LL, Flamm SD. Screening adult survivors of childhood cancer for cardiomyopathy: comparison of echocardiography and cardiac magnetic resonance imaging. J Clin Oncol 2012; 30:2876–2884.
5. Gziri MM, Amant F, Debieve F, Van Calsteren K, De Catte L, Mertens L. Effects of chemotherapy during pregnancy on the maternal and fetal heart. Prenat Diagn 2012; 32:614–619.
6. Chow EJ, Chen Y, Kremer LC, Breslow NE, Hudson MM, Armstrong GT, Border WL, Feijen EA, Green DM, Meacham LR, Meeske KA, Mulrooney DA, Ness KK, Oeffinger KC, Sklar CA, Stovall M, van der Pal HJ, Weathers RE, Robison LL, Yasui Y. Individual prediction of heart failure among childhood cancer survivors. J Clin Oncol 2015; 33:394–402.
7. Adams MJ, Hardenbergh PH, Constine LS, Lipshultz SE. Radiationassociated cardiovascular disease. Crit Rev Oncol Hematol 2003; 45:55–75.
8. Adams MJ, Lipshultz SE, Schwartz C, Fajardo LF, Coen V, Constine LS. Radiation-associated cardiovascular disease: manifestations and management. Semin Radiat Oncol 2003; 13:346–356.
9. Zamorano HL, Lancellotti P, Munoz DR, et al. 2016 ESC Position Paper on cancer treatments and cardiovascular toxicity developed under the auspices of the ESC Committee for Practice Guidelines.Eur Herat J 2016; 37:2768-2801.
10. Steinherz LJ, Steinherz PG, Tan CT, Heller G, Murphy ML. Cardiac toxicity 4 to 20 years after completing anthracycline therapy. JAMA 1991; 266:1672–1677.
11. Regitz-Zagrosek V, Blomstrom Lundqvist C, Borghi C.et al. ESC Guidelines on the management of cardiovascular diseases during pregnancy. Eur Heart J 2011; 32:3147–3197.
12. Ponikowski P, Voors A, Anker S.et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure Eur Heart J 2016; 37:2129–2200.
13. Sawaya H, Sebag IA, Plana JC, Januzzi JL, Ky B, Tan TC, Cohen V, Banchs J, Carver JR, Wiegers SE, Martin RP, Picard MH, Gerszten RE, Halpern EF, Passeri J, Kuter I, Scherrer-Crosbie M. Assessment of echocardiography and biomarkers for the extended prediction of cardiotoxicity in patients treated with anthracyclines, taxanes, and trastuzumab. Circ Cardiovasc Imaging 2012; 5:596–603.
14. Plana JC, Galderisi M, Barac A,et al. Expert consensus for multimodality imaging evaluation of adult patients during and after cancer therapy: a report from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. Eur Heart J Cardiovasc Imaging 2014; 15:1063–1093.
15. Todaro MC, Oreto L, Qamar R, Paterick TE, Carerj S, Khandheria BK. Cardioncology: state of the heart. Int J Cardiol 2013; 168:680–687.