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Prenatal diagnosis of central nervous system (CNS) pathologies: Does fetal MRI help in their management?

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One strategy to prevent or alleviate pediatric diseases is to get an early diagnosis of a pathology. From the radiological point of view, the means to get a most accurate diagnosis at the earliest time point lies in the use of MRI during fetal life. Regarding the brain, the main questions for fetal MRI comprise whether a pathology is compatible with survival, the long term prognosis for neuropsychological development, and the definition of a possible genetic background that would allow specific testing in a consecutive pregnancy. In addition to detailed morphology, fetal MRI offers information about connectivity and function. Especially in malformations of cortical development, commissural agenesis, and posterior fossa pathologies, these MR-applications allow most accurate answers to the questions above, from the middle second trimester onwards. In case of acquired conditions, such as cerebral haemorrhage, the underlying reason may be identified, and treatment (shunting of posthemorrhagic hydrocephalus) may be planned in a tailored scheme. With respect to spinal malformation the main challenge for prenatal MRI is to define the presence of an open or closed spinal defect. Open defects may be treated surgically already in intrauterine stages, while this option is not be indicated in closed defects. Prognostically, the spinal level of the expected palsy can also be estimated. The use of fetal MRI has increased worldwide during the last years, as early diagnosis , especially of CNS pathologies helps not only with the management of the pregnancies, but also enables the development of new therapeutic strategies.

Biography

Daniela Prayer has completed her MD degree at the University of Vienna, Austria, and spent a year as a research fellow at the Department of Radiology at USCF/ San Francisco. Since 2009, she is the Director of the Division of Neuroradiology and Musculoskeletal Radiology at the Medical University of Vienna. One of her main scientific topics is fetal MRI. She is the author of more than 280 scientific papers.

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