

Fetal choroid plexus papilloma

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Fetal [choroid plexus papilloma](#) are uncommon.

[Antenatal](#) choroid plexus tumors are described most often during the third trimester, presenting as a large homogeneous mass. They can also be revealed by the presence of [hydrocephalus](#) or [ventriculomegaly](#) because of overproduction of cerebrospinal fluid or obstruction of the [foramen of Monro](#) by the mass ¹⁾.

Diagnosis

As sonographic finding echogenic homogenous mass with surface vascularization and cerebral ventricular enlargement can be observed in the case of choroid plexus papillomas. Anatomical displacement of the midline brain structures due to tumor compression could be also present. The tumor is often accompanied by a hemorrhage ²⁾.

MRI appears to be useful to rule out a hematoma and to determine the precise location of the tumor and the presence of peritumoral edema.

It appears that during the neonatal or antenatal period, papilloma is more frequent than carcinoma. Radiological findings show no difference between papilloma and carcinoma. Hydrocephalus is observed in both papilloma and carcinoma but rapid growth is usual in papilloma, particularly in neonatal cases.

The prognosis for cases of intraventricular tumor remains difficult to assess based on antenatal imaging findings even with high resolution and specific MRI sequences. The volume of the mass and the findings on color Doppler imaging do not allow discrimination between benign and malignant tumors. Considering that papilloma and carcinoma are both possible etiologies, and since histology cannot be assessed prenatally, prudent counseling is particularly important in such cases ³⁾.

Differential diagnosis

Teratomas, ventricular hemorrhage and choroids plexus carcinoma should be taken into consideration in the differential diagnostic thoughts.

Intraplexic hematoma is a differential diagnosis but may also be a complication of plexus tumors ⁴⁾.

Associated anomalies

The choroid plexus papilloma is often isolated; however association with the Aicardi syndrome has been described ^{5) 6)}.

Outcome

The prognosis is widely variable and depends on the histological findings: [choroid plexus papilloma](#) or carcinoma.

In one case, the tumor was considered not accessible for surgery, and autopsy after postnatal death revealed a choroid plexus papilloma with intraventricular hemorrhage ⁷⁾.

Anselem et al. hypothesized that neurosurgical experience with neonatal brain tumors could be transposed to antenatal cases to help determine the prognosis. According to published series, almost half of these tumors are carcinomas, but the incidence could be different for prenatal cases. In a recent series of 38 cases of plexus tumors operated on at a mean age of 22 months, histology revealed 25 papillomas and 13 carcinomas, and in a more recent study of seven neonates, all cases were papillomas, with one anaplastic papilloma (unpubl. observ.).

Case reports

2017

Diguisto C, Simon EG, Callé S, Ternifi R, Remeniéras JP, Hervé P, Perrotin F. Ultrasonic elastography exploration of the foetal brain: A case of atypical choroid plexus papilloma. *J Obstet Gynaecol.* 2017 May;37(4):525-527. doi: 10.1080/01443615.2017.1281893. Epub 2017 Feb 25. PubMed PMID: 28421905 ⁸⁾.

2014

Verma SK, Satyarthee GD, Sharma BS. Giant choroid plexus papilloma of the lateral ventricle in fetus. *J Pediatr Neurosci.* 2014 May;9(2):185-7. doi: 10.4103/1817-1745.139359. PubMed PMID: 25250084; PubMed Central PMCID: PMC4166851 ⁹⁾.

2013

Ditz C, Nowak G, Koch C, Merz H, Tronnier V. Atypical choroid plexus papilloma in a newborn: prenatal diagnosis, preoperative tumor embolization, and resection. *J Neurol Surg A Cent Eur Neurosurg.* 2013 Jan;74(1):59-63. doi: 10.1055/s-0032-1313639. Epub 2012 Aug 1. PubMed PMID: 21830192 ¹⁰⁾.

2011

Anselem et al. report a case of prenatal diagnosis of choroid plexus mass detected by ultrasound at 33 weeks of gestation. Prenatal (T1, T2, T2* and diffusion weighted sequences) magnetic resonance imaging (MRI) was used to rule out a hematoma. Follow-up examination by ultrasound and MRI revealed a significant increase in the volume of the mass, suggesting a diagnosis of malignant tumor. A healthy neonate was delivered by Cesarean section at 38 weeks of gestation. Full surgical excision of the tumor was performed at 20 days after delivery and histological analysis revealed a papilloma

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2009

Barber et al. reported findings of a papilloma located in the posterior horn that appeared upon ultrasound examination as a hyperechoic mass corresponding to intracranial hemorrhage, with an irregular surface and perilesional vascularization ¹²⁾.

Murata M, Morokuma S, Tsukimori K, Hojo S, Morioka T, Hashiguchi K, Sasaki T, Wake N. Rapid growing cystic variant of choroid plexus papilloma in a fetal cerebral hemisphere. *Ultrasound Obstet Gynecol.* 2009 Jan;33(1):116-8. doi: 10.1002/uog.6262. PubMed PMID: 19009522 ¹³⁾.

2004

Noguchi A, Shiokawa Y, Kobayashi K, Saito I, Tsuchiya K, McMenomey SO, Delashaw JB. Choroid plexus papilloma of the third ventricle in the fetus. Case illustration. *J Neurosurg.* 2004 Feb;100(2 Suppl Pediatrics):224. PubMed PMID: 14758957 ¹⁴⁾.

2002

Cohen et al. report of a prenatal sonographic diagnosis of a lateral ventricle choroid plexus papilloma in an in vitro fertilization (IVF)-induced pregnancy of a 40-year-old woman. The baby was delivered at 35 weeks of gestation and surgery was performed 5 days later with a good outcome. Several cases of malignancies associated with IVF are reported in the literature. To the best of the authors' knowledge, this is the first report of a prenatal diagnosis of choroid plexus papilloma in an IVF-induced pregnancy. The authors also review other cases of choroid plexus papilloma diagnosed prenatally by ultrasound. The theoretical association between IVF and neoplasia is also considered ¹⁵⁾.

1990

A case of a fetus delivered in the 24th week of pregnancy whose intracranial space was found to be almost totally filled up by a choroid plexus papilloma. Co-expression of vimentin and cytokeratin 8, 18 of the epithelium was immunocytochemically observed, as had been also described in normal fetal choroid plexus ¹⁶⁾.

1988

Schellhas KP, Siebert RC, Heithoff KB, Franciosi RA. Congenital choroid plexus papilloma of the third ventricle: diagnosis with real-time sonography and MR imaging. *AJNR Am J Neuroradiol.* 1988 Jul-Aug;9(4):797-8. PubMed PMID: 3135726 ¹⁷⁾.

1983

Gradin WC, Taylon C, Fruin AH. Choroid plexus papilloma of the third ventricle: case report and review of the literature. *Neurosurgery*. 1983 Feb;12(2):217-20. PubMed PMID: 6835505 ¹⁸⁾.

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Anselem O, Mezzetta L, Grangé G, Zerah M, Benard C, Marcou V, Fallet-Bianco C, Adamsbaum C, Tsatsaris V. Fetal tumors of the choroid plexus: is differential diagnosis between papilloma and carcinoma possible? *Ultrasound Obstet Gynecol*. 2011 Aug;38(2):229-32. doi: 10.1002/uog.8919. PubMed PMID: 21800389.

²⁾

<https://sonoworld.com/fetus/page.aspx?id=2451>

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Noguchi A, Shiokawa Y, Kobayashi K, Saito I, Tsuchiya K, McMenomey SO, Delashaw JB. Choroid plexus papilloma of the third ventricle in the fetus. Case illustration. *J Neurosurg*. 2004 Feb;100(2 Suppl Pediatrics):224. PubMed PMID: 14758957.

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Erman T, Göçer AI, Erdoğan S, Tuna M, Ildan F, Zorludemir S. Choroid plexus papilloma of bilateral lateral ventricle. *Acta Neurochir (Wien)*. 2003 Feb;145(2):139-43; discussion 143. PubMed PMID: 12601462.

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Adra AM, Mejides AA, Salman FA, Landy HJ, Helfgott AW. Prenatal sonographic diagnosis of a third ventricle choroid plexus papilloma. *Prenat Diagn*. 1994 Sep;14(9):865-7. PubMed PMID: 7845895.

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Diguisto C, Simon EG, Callé S, Ternifi R, Remeniéras JP, Hervé P, Perrotin F. Ultrasonic elastography exploration of the foetal brain: A case of atypical choroid plexus papilloma. *J Obstet Gynaecol*. 2017 May;37(4):525-527. doi: 10.1080/01443615.2017.1281893. Epub 2017 Feb 25. PubMed PMID: 28421905.

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Barber MA, Eguiluz I, Plasencia W, Medina M, Valle L. Intracranial fetal hemorrhage due to choroid plexus papilloma. *Int J Gynaecol Obstet*. 2009 May;105(2):172-3. doi: 10.1016/j.ijgo.2008.11.041. Epub 2009 Feb 5. PubMed PMID: 19200541.

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Murata M, Morokuma S, Tsukimori K, Hojo S, Morioka T, Hashiguchi K, Sasaki T, Wake N. Rapid growing cystic variant of choroid plexus papilloma in a fetal cerebral hemisphere. *Ultrasound Obstet Gynecol*. 2009 Jan;33(1):116-8. doi: 10.1002/uog.6262. PubMed PMID: 19009522.

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Cohen ZR, Achiron R, Feldman Z. Prenatal sonographic diagnosis of lateral ventricle choroid plexus papilloma in an in vitro fertilization-induced pregnancy. *Pediatr Neurosurg*. 2002 Nov;37(5):267-70. PubMed PMID: 12411720.

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Schellhas KP, Siebert RC, Heithoff KB, Franciosi RA. Congenital choroid plexus papilloma of the third ventricle: diagnosis with real-time sonography and MR imaging. *AJNR Am J Neuroradiol*. 1988 Jul-Aug;9(4):797-8. PubMed PMID: 3135726.

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