

## CORPUS CALLOSUM INFARCT IN A 3 MONTH CHILD: A RARE CASE REPORT

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### ABSTRACT

Corpus callosal infarcts are rare because of a rich collateral blood supply and are associated with systemic vasculitides, emboli, major ischemic stroke, or subfalcine herniation with mass effect. The splenium is most commonly affected, followed by the body and genu. CT lacks the necessary contrast resolution to identify mild edema associated with callosal infarcts. On MRI, reduced diffusivity on diffusion-weighted imaging is the earliest sign, followed by edema with T2 hyperintensity and T1 hypointensity. We present a case of corpus callosum infarction in a three-month child who presented to us with complaints of fever, decreased acceptance, severe asphyxia and decreased tone. The child was a known case of tuberculosis with a family history of tuberculosis also present in the mother. Diagnosed was made on the basis of Diffusion-Weighted magnetic resonance imaging (DW imaging) and treated conservatively.

**KEY-WORDS:** Corpus callosum infarct, Diffusion-weighted imaging.

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### INTRODUCTION

The corpus callosum connects the two cerebral hemispheres and is the largest commissure composed of white matter tracts. Corpus callosum has four parts: rostrum, genu, body, and splenium (anterior to posterior). The corpus callosum has a rich vascular supply. It is supplied by three main arteries: The pericallosal artery, the anterior communicating artery, and the posterior pericallosal artery.<sup>1</sup> Corpus callosum infarcts are rare and isolated infarcts are even rarer. Ischemia due to hypoxia, in the

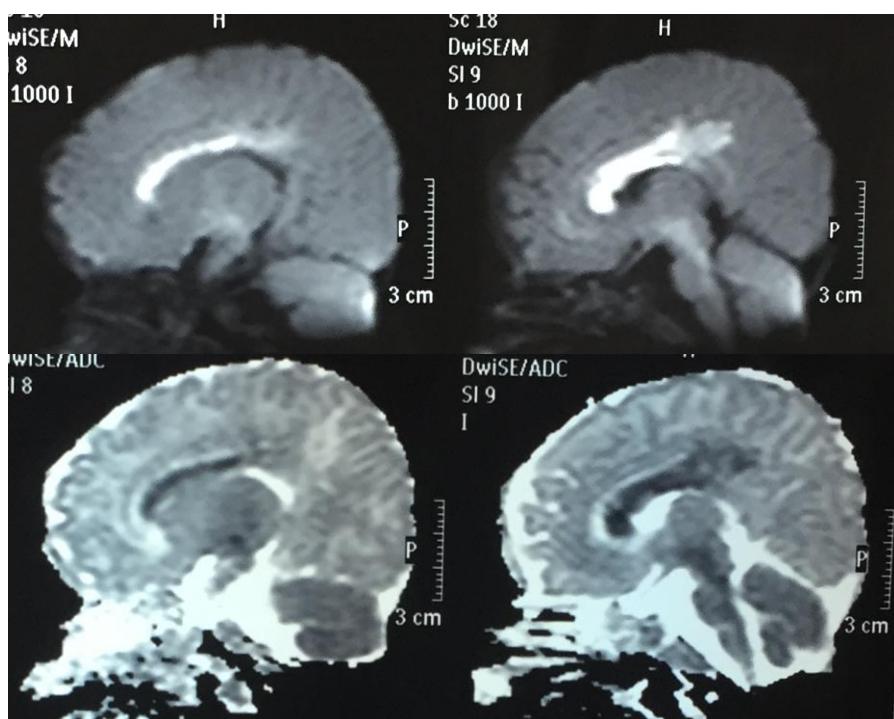
neonatal period especially, produces a typical diffuse callosal infarct pattern. Such children have an unfavorable outcome.<sup>2</sup>

### CASE REPORT

We report a case of a three-month old baby who presented to us with fever, decreased acceptance, severe asphyxia and decreased tone in all limbs. On examination the general condition of the baby was poor, tachycardia with increased breathing rate was present. Air entry in B/L lungs was reduced with basal crepitus. On ultrasound,

hepatosplenomegaly was noted. CSF study was done and was found to be sterile with raised CSF protein. We did MRI brain with Magnetic Resonance Angiography. On diffusion-weighted imaging, restricted diffusion was seen in entire corpus callosum and apparent diffusion coefficient images. The rest of the brain parenchyma was normal on all MR sequences. This atypical

pattern, which involves the entire corpus callosum was attributed to hypoxic insult. Thus diagnosis was confirmed on MR. MR angiography was also done and was found normal. The baby was managed conservatively with antitubercular drugs and other supportive medications but unfortunately died after 10 days.



**FIGURE 1.** On diffusion-weighted imaging, restricted diffusion is seen in the entire corpus callosum and apparent diffusion coefficient images.

## DISCUSSION

Infarcts of the corpus callosum are not common, and this is most likely due to a rich blood supply.<sup>3</sup> Corpus callosum arterial vasculature is connected by two arterial systems, the carotid mainly and the vertebrobasilar system. The carotid system supplies via the pericallosal artery (major supply), a portion of the anterior cerebral artery distal to the anterior communicating

artery. The vertebrobasilar system supplies the splenium by its terminal branches. These two vascular systems give rise to perforating arteries that assure intrinsic vascularization of the corpus callosum creating a system of regular vascular stitches around the fibers of the corpus callosum.<sup>4</sup> Thus isolated infarcts are even rarer, however, ischemia due to hypoxia, in the neonatal period especially, produces a typical diffuse callosal infarct pattern.<sup>2</sup> The clinical manifestations of the

acute corpus callosum infarction are non-specific and complex.<sup>5,6</sup> Thus, it is easily missed diagnosis in the early stage.<sup>7</sup> However, with the widespread application of magnetic resonance imaging, its diagnostic rate is much higher.<sup>8,9</sup> On MRI, restricted diffusion on diffusion weighted imaging (DWI) is the earliest sign, followed by edema appearing hyperintense on T2W images and hypointense on T1W images.<sup>10</sup> Our case was an isolated corpus callosal infarct attributed to systemic vasculitides caused by tuberculosis whose diagnosis was confirmed with DWI. Thus, despite complex clinical presentation MRI findings concluded to the diagnosis.

## CONCLUSION

Corpus callosum infarcts are rare and isolated infarcts are even rarer. Ischemia due to hypoxia, in the neonatal period especially, produces a typical diffuse callosal infarct pattern, which can be diagnosed with diffusion weighted imaging.

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