

Spontaneous pneumomediastinum associated with subcutaneous emphysema causing brachial plexus palsy in a term newborn

Ibrahim Silfeler¹, Hilal Kurnaz², Yesim Acar³, Vefik Arica⁴, Murat Tutanc⁵, Fugen Pekun⁶

ABSTRACT

Neonatal pneumomediastinum is a rare condition which often occurs during the setting of assisted ventilation of premature or diseased lungs. Brachial palsy occurs in presence of impression on cervical and throcal nerve roots due to birth-related trauma. In this case; we present a progressive spontaneous pneumomediastinum. Although subcutaneous emphysema was involving the whole neck, right cervical region was predominantly involved. Even though there was no diagnosed brachial palsy just after delivery, in time, we realized that the right arm was affected. In the literature, we couldn't find any reported case of spontaneous pneumomediastinum associated with subcutaneous emphysema causing brachial plexus palsy in neonatal period.

KEY WORDS: Pneumomediastinum, Neonate, Subcutaneous emphysema, Erb-duchenne, Brachial plexus palsy.

Pak J Med Sci January - March 2011 Vol. 27 No. 1 190-192

How to cite this article:

Silfeler I, Kurnaz H, Acar Y, Arica V, Tutanc M, Pekun F. Spontaneous pneumomediastinum associated with subcutaneous emphysema causing brachial plexus palsy in a term newborn. Pak J Med Sci 2011;27(1):190-192

INTRODUCTION

Spontaneous pneumomediastinum in newborns is a rarely seen condition and, usually seen in the presence of any other underlying lung disease or assisted ventilation.¹ Neonatal pneumomediastinum occurs

in approximately 2.5 per 1000 live births.² In newborn period brachial plexus palsy is generally due to birth-related trauma and its incidence is reported as 0.5 to one per 1000 live births.³ Other causes except birth trauma are more rare and are also related to other kinds of trauma.⁴

In this case report, pneumomediastinum occurred spontaneously and the subcutaneous emphysema caused brachial palsy by impressing to brachial plexus in follow up.

CASE REPORT

A female fetus weighing 3210g with an uneventful antenatal follow-up was delivered at term by an uncomplicated normal vaginal delivery. The Apgar scores were 7 at one min and 8 at five minutes. Mild respiratory distress was noted at birth and respiratory rate was 52/min. Auscultation revealed crepitation in random regions of the right lung and minimal reduction in respiratory sounds of the left lung. Heart beat rate was 117/min and S1(+) S2(+) murmur didn't exist. Neonatal reflexes were normal,

1. Ibrahim Silfeler,
2. Hilal Kurnaz,
3. Yesim Acar,
4. Vefik Arica,
5. Murat Tutanc,
6. Fugen Pekun,

1-3, 6: Department of Paediatrics, Okmeydani Education and Research Hospital, Sisli, Istanbul, Turkey

4, 5: Department of Paediatrics, Faculty of Medicine, Mustafa Kemal University, Hatay, Turkey.

Correspondence:

Ibrahim Silfeler,
Alaaddin koyu, Gungor uydukent 30 parsel D11/3,
Antakya/ Hatay,
Turkey.
E-mail: drsilfeler@gmail.com

* Received for Publication: May 12, 2010

* Accepted: November 5, 2010

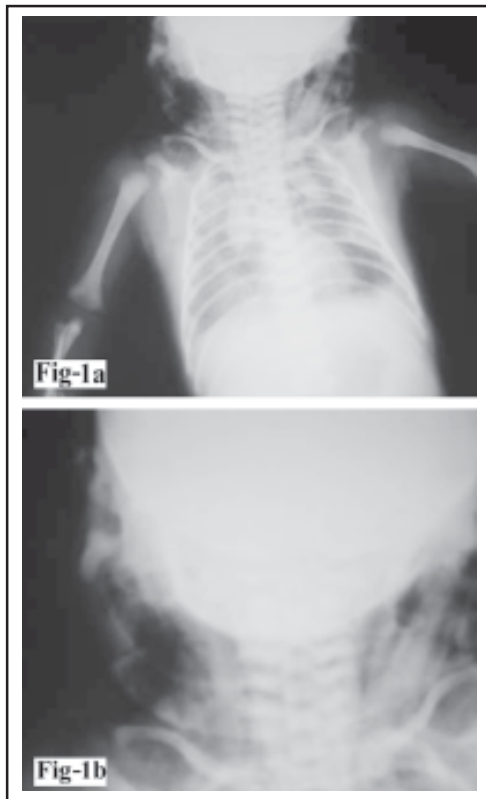


Fig-1a, 1b: Cervical subcutaneous emphysema and pneumomediastinum in chest radiograph.

Moro reflex was active and symmetrically present on each side. There was a widespread protuberance at the temporoparietal region of the head and especially on the right side of the neck. On cervical USG the signs as thickness of subcutaneous tissue, heterogeneous appearance and increased lucency in some regions were compatible with subcutaneous emphysema.

There were cervical subcutaneous emphysema and pneumomediastinum in chest radiograph (Fig-1a, 1b), pneumomediastinum and basal patches of compression atelectasis on CT (Fig-2a, 2b, 2c). Transechocardiography was normal. Full blood count, Blood biochemistry and arterial blood gas rates were in normal ranges. The baby was put on hood oxygen and followed-up. After six hours, Moro reflex was weak but grasping reflex was normal and Erb's palsy, which wasn't present on initial examination was detected. By two days of age her respiratory distress, clinical and radiological findings caused by subcutaneous emphysema began to resolve. Chest x-ray films obtained at 2nd day revealed complete resorption of pneumomediastinum; Erb's palsy was still present. By 12th day, baby was discharged from hospital and followed up by the neurology clinic.

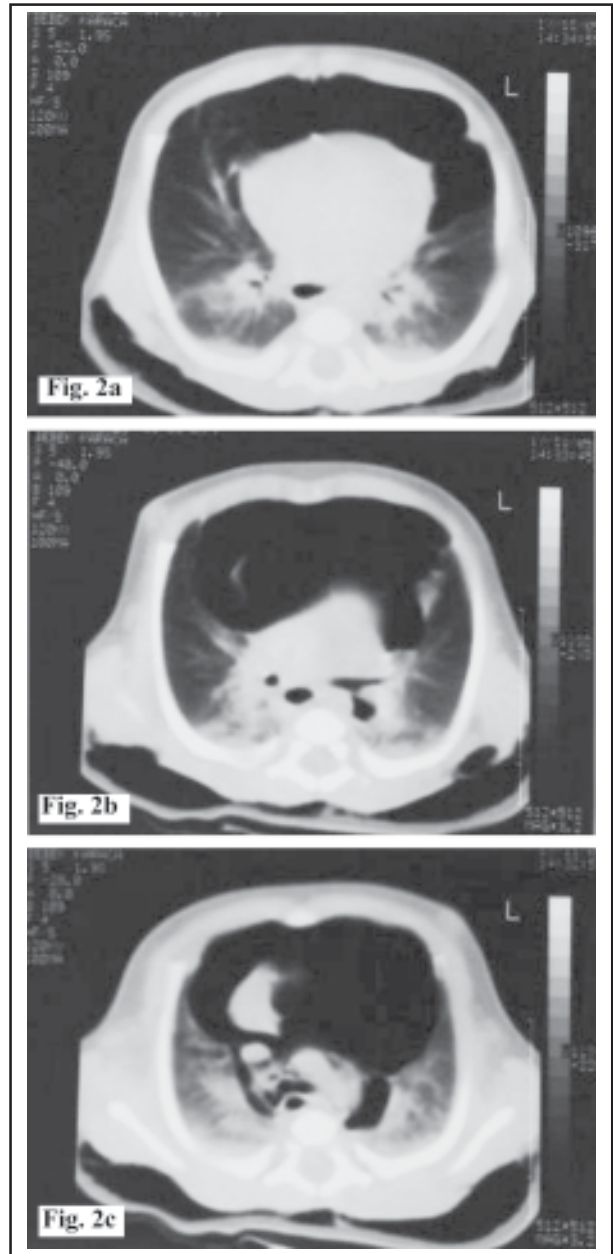


Fig-2a, 2b, 2c: Pneumomediastinum and basal patches of compression atelectasis on CT.

DISCUSSION

Spontaneous pneumomediastinum is rare and often occurs during the setting of assisted ventilation of premature or diseased lungs or physical traction during delivery.¹ Alveolar rupture secondary to increased pressure or over distension leads to air dissection along perivascular and peribronchic tissues up to the hilum of the mediastinum and to the soft tissues of the cervical region that results in subcutaneous emphysema.^{5,6}

In our case none of the causes of pneumomediastinum was found and determined as the pneumomediastinum occurred spontaneously. In literature, it is pointed out that the cause of spontaneous pneumomediastinum may lie in the rupture of the relatively underdeveloped alveoli coupled with vigorous respiratory efforts at birth.¹ The incidence of subcutaneous emphysema in spontaneous pneumomediastinum is 60%.⁵ In our patient subcutaneous emphysema that occurred just after the birth, was prominent at the right side of the neck although it encased the whole neck and was the cause of brachial palsy. Congenital brachial palsy is the result of trauma at birth to the brachial plexus resulting in stretching, rupture, or avulsion of some, or all, of the cervical and first thoracic nerve roots.³ Brachial palsy occur usually in large babies. The prognosis is well. Recovery of neurologic function is usually spontaneous and may occur within 48 hours; however, it can take up to six months, sometimes 12 months to 18 months.^{7,8}

In conclusion, spontaneous pneumomediastinum rarely develops during newborn period and usually has a fine course; nonetheless like our case, cervical

subcutaneous emphysema may lead to brachial palsy by local affect.

REFERENCES

1. Low AS, Tan-Kendrick AP, Loh M, Chui CH. Spontaneous multiloculated multiseptated pneumomediastinum in a newborn baby: The spinnaker sail is rigged-CT features with pathologic correlation. *Pediatr Radiol* 2003;33:712-715.
2. Hacking D, Steward M. Neonatal pneumomediastinum. *N Engl J Med* 2001;344:1839.
3. Evans-Jones G, Kay SP, Weindling AM, Cranny G, Ward A, Bradshaw A, et al. Congenital brachial palsy: Incidence, causes, and outcome in the United Kingdom and Republic of Ireland. *Arch Dis Child. Fetal Neonatal Ed* 2003;88:185-189.
4. Behrman RE, Kliegman RM, Jenson HB. *Nelson Textbook of Paediatrics*, 17th Ed. Philadelphia, Pa: Saunders; 2004: 565-566.
5. Chapdelaine J, Beaunoyer M, Daigneault. Spontaneous pneumomediastinum: Are we over investigating? *J Pediatr Surg* 2004;39:681-684.
6. Chalumeau M, LeClainche L, Sayeg N, Sannier N, Michel JL, Marianowski R, et al. Spontaneous pneumomediastinum in children. *Pediatr Pulmonol* 2001;31:67-75.
7. Hemady N, Noble C. Newborn with abnormal arm posture. *Am Fam Physician* 2006;73(11):2015-2016.
8. Hoffer MM. Brachial plexus palsies in neonates. *WJM* 1998;168:126.

Electronic Submission of Articles

"PAKISTAN JOURNAL OF MEDICAL SCIENCES" now accepts electronic submission of articles via e-mail, attachment in MS Word format at any of the following addresses:

pjms@pjms.com.pk
pulse@pulsepakistan.com

Note: The figures should be sent in JPEG format to ensure good quality images.

(Arrangements are also being made to accept manuscripts through our website in due course of time)

Electronic submission saves time, postage costs and allows the manuscript to be handled in electronic form throughout the publication process.

Processing Charges: Effective January 1st, 2010 all manuscripts from Pakistan should be accompanied with a Cash or Bank Draft for Rs. 1,000/- (Non-refundable) in the name of Pakistan Journal of Medical Sciences. Add Rs. 250/- in case of cheque.)

For detailed instructions to authors visit our website

pjms.com.pk