CASE REPORT

Blue Rubber Bleb Nevus Syndrome with Musculo-skeletal Involvement and Pulmonary Stenosis

A SINGAL, S VOHRA, R SHARMA AND * S BHATT

*From Departments of Dermatology and STD, and *Radiology, University College of Medical Sciences and GTB Hospital (University of Delhi), Dilshad Garden, Delhi, India.*

Correspondence to: Dr (Prof) Archana Singal, University College of Medical Sciences and GTB Hospital, Delhi 110 095, India. archanasingal@hotmail.com
Received: September 12, 2015; Initial review; October 26, 2015; Accepted: February 13, 2016.

Background: Blue rubber bleb nevus syndrome is a rare clinical entity. **Case characteristics:** A 13-year-old Indian boy presented with characteristic cutaneous lesions, gastrointestinal malformations, skeletal involvement and pulmonary stenosis. **Observation:** Diagnosis was confirmed on skin biopsy, radiographic evaluation, colonoscopy and echocardiography. Echocardiography revealed pulmonary stenosis, an association hitherto undescribed. **Message:** Detailed evaluation in a patient of blue rubber bleb nerves syndrome is mandatory.

Keywords: *Hemangioma, Pulmonary stenosis, Vascular malformations.*

Blue rubber bleb nevus syndrome (BRBNS, Bean syndrome) is a rare disorder with venous malformations involving skin and other organs especially gastrointestinal tract. William Bennet Bean in 1958 coined the term 'blue ruber bleb syndrome' on the basis of bluish color of the nevi and their rubbery consistency [1]. Cutaneous vascular malformations, characterized by multiple, asymptomatic, bluish and rubbery blebs are located on trunk and upper extremities. Gastrointestinal (GI) lesions are commonly located in the small intestine causing occult and chronic bleeding leading to iron deficiency anemia [2]. Herein, we describe a case of BRBNS in an adolescent boy with prominent musculo-skeletal involvement and pulmonary stenosis.

CASE REPORT

A 13-year-old boy presented with multiple blue raised skin lesions all over the body. Starting in the first year of life the lesions first appeared on the nape of the neck and gradually increased in number and size. He denied history of seizures, headache, vision/ hearing defect, dyspnea, dysphagia, GI bleed or pain abdomen. Physical examination revealed moderate pallor and an eversion deformity of the left foot (***Fig.* 1a**). The length and girth of the left leg was decreased as compared to the right side (82 *vs* 87 cms when measured between anterior superior iliac spine and lateral malleolus and 21cm *vs* 24 cm measured at the junction of middle and lower one third of leg) leading to short limb gait along with the scoliosis of dorso-lumbar spine.

Multiple, discrete, skin and blue coloured smooth surfaced papules, nodules and subcutaneous swellings (0.5 - 4cm size) were distributed over the right lower eye lid, around the neck, sternal notch, retroauricular regions and fewer lesions over trunk, bilateral upper and lower extremities (***Fig.* 1**). These lesions were soft, partially to completely compressible, non-pulsatile and non-tender without ulceration and haemorrhage. Except for moderate microcytic hypochromic anemia (hemoglobin 8 g/dL), serum chemistry and coagulation study were normal. Stool for occult blood was negative.

Skin biopsy from the lesion showed presence of ectatic channels in the dermis lined by endothelium. Colour Doppler study confirmed the low flow nature of lesions. Radiograph of the dorso-lumbar spine revealed mild scoliosis with concavity towards the left in the dorsal and towards right in the visualized lumbar spine). Scoliosis occurred as a compensatory phenomenon due to shortening of the left leg. Radiograph of the neck lateral view showed multiple rounded radio-densities consistent with phleboliths (***Fig.* 2**). X-rays of left lower limb revealed cortical irregularities, bowing of the fibula, multiple soft tissue calcifications and generalized osteopenia. There was restricted growth of distal lateral epiphysis of left tibia leading to eversion deformity of the left foot Magnetic resonance imaging brain, ultrasonography (USG) thyroid and eyes, upper gestrointestinal (GI) endoscopy and computed tomography scans of abdomen and pelvis were normal. Colonoscopy showed numerous, 3-5 mm bluish nodules

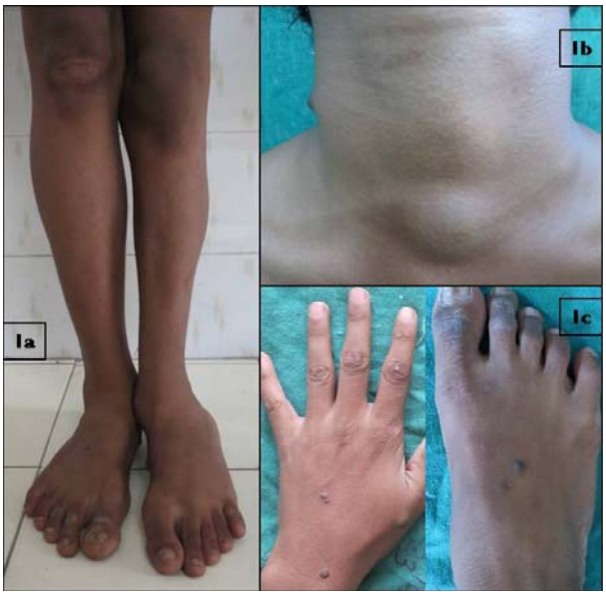

FIG. 1 *Eversion deformity of the left foot; (a) Bluish papule and subcutaneous swellings around neck; (b) and lesions over hands and feet (c).*

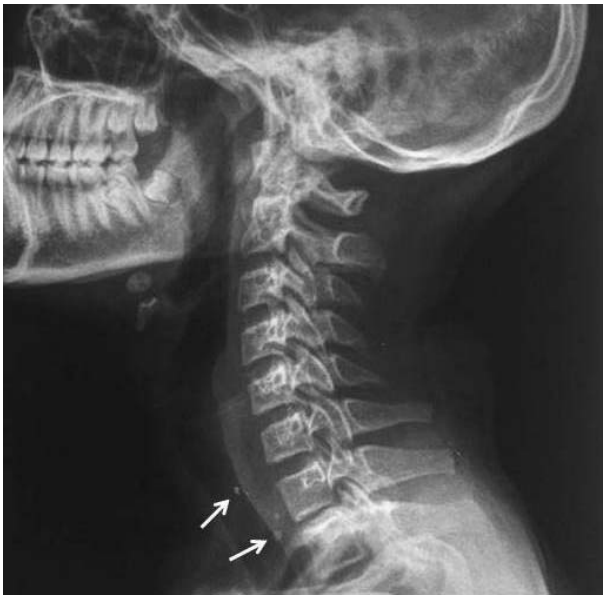

FIG. 2 *Radiograph of the neck lateral view shows multiple rounded radio-densities (arrow) consistent with phleboliths.*

studded on the mucosal surface of rectum, sigmoid and descending colon. Echocardiography revealed pulmonary stenosis.

The child was started on oral hematinics for anemia. Parents were counselled regarding the possible gastrointestinal complications and importance of periodic gastroenterology and cardiology follow up.

DISCUSSION

BRBNS is a rare disorder characterized by multiple venous malformations in the skin, gastrointestinal tract and less often in the central nervous system, musculoskeletal system, thyroid, parotids, eyes, oral cavity, kidney, liver, and bladder [3]. Diagnosis of BRBNS is based on the presence of characteristic asymptomatic cutaneous venous malformations that are usually present at birth or appear in early life while other organ involvement appears later, as such in our case. Lesions are preferentially located on the upper limbs, trunk, and perineum. Venous malformations of the lower limbs are unusual and are often associated with significant orthopedic involvement as seen in present case [4].

Intestinal lesions cause chronic bleeding and rarely present with acute hematemesis or melena. Rarely, complications like intussusception, volvulus, infarction or hemorrhage can occur. There are few reports of BRBNS with associated cardiac defects like atrial and ventricular septal defects and pulmonary hypertension secondary to thromboembolic events [5,6]. Our patient had pulmonary stenosis, an association hitherto undescribed.

Orthopedic manifestations include skeletal bowing, pathological fractures, articular problems and bony overgrowth that arise as a result of pressure effects from adjacent vascular lesions. Presence of scoliosis, pectus excavatum, and congenital dysplasia of hip and club foot in a new born with BRBNS has been described [7]. However, in the present case, skeletal anomalies were late in onset and included dorso-lumbar scoliosis, bowing of fibula and eversion deformity of foot.

Therapeutic options in BRBNS depend upon the clinical manifestations. Cutaneous lesions require treatment when they are cosmetically unacceptable or functionally troublesome. Ruby, argon, and carbon-dioxide laser treatments, electrodessication, scalpel excision, and injection sclerotherapy have been tried. Medical treatment for gastrointestinal lesions includes oral hematinics for anemia, interferon gamma, octreotide and sirolimus [8,9]. In addition, endoscopic sclerotherapy, surgical bowel resection and photocoagulation have been tried. For orthopedic abnormalities, physiotherapy, serial plaster cast correction, braces or surgical excision have been used. The prognosis varies with the extent of visceral organ involvement and most patients tend to have normal life span.

We conclude that a detailed systemic evaluation is recommended in patients with BRBNS to look for asymptomatic organ involvement and advice on regular follow-up and early institution of appropriate treatment.

Contributors: AS: Patient management and diagnosis; SV: Patient management, searching related literature and writing the manuscript; RS: literature review and writing the manuscript; SB: Radiographic evaluation and diagnosis.
Funding: None; *Competing interests*: None stated.

REFERENCES

1. Bean WB. Vascular spiders and related lesions of the skin. IL, Springfield.Thomas, 1958.
2. Moodley M, Ramdial P. Blue rubber bleb nevus syndrome: case report and review of literature. Pediatrics. 1993;92:160-2.
3. Haiping P, Guoqing L, Zhongshu Y. Blue rubber bleb naevus syndrome. Eur J Surg. 2001;167: 628-30.
4. McCarthy JC, Goldberg MJ, Zimbler S. Orthopedic dysfunction in blue rubber bleb nevus syndrome. J Bone Joint Surg Am. 1982;64:280-3.
5. Aroor S, Varma C, Mundkur SC. Blue rubber-bleb vevus syndrome which was associated with an atrial septal defect: A case report. J Clin Diagn Res. 2012;6:1566-7.
6. Giordano C, Battagliese A, di Gioia CR, Campagna D, Benedetti F, Travaglini C, *et al*. Blue rubber bleb nevus syndrome and pulmonary hypertension: An unusual association. Cardiovasc Pathol. 2004;13:317-22.
7. Tzoufi MS, Sixlimiri P, Nakou I, Argyropoulou MI, Stefanidis CJ, Siamopoulou-Mavridou A. Blue rubber bleb nevus syndrome with simultaneous neurological and skeletal involvement. Eur J Pediatr. 2008;167:897-901.
8. Gonzalez D, Elizondo BJ, Haslag S, Buchanan G, Burdick JS, Guzzetta PC, *et al*. Chronic subcutaneous octreotide decreases gastrointestinal blood loss in blue rubber-bleb nevus syndrome. J Pediatr Gastroenterol Nutr. 2001;33:183-8.
9. Yuksekkaya H, Ozbek O, Keser M, Toy H. Blue rubber bleb nevus syndrome: successful treatment with sirolimus. Pediatrics. 2012;129:1080-4.