Pityriasis rosea in pregnancy: report of a spousal occurrence and craniosynostosis in the healthy newborn

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ABSTRACT

Background: Pityriasis rosea is a papulosquamous disease. It may occur during pregnancy; in this setting, it has occasionally been associated with adverse outcomes.

Purpose: A woman who developed pityriasis rosea at the beginning of her eighth week of gestation is described. The outcomes in newborns delivered by pregnant women who developed pityriasis rosea during gestation are summarized.

Method: A 28-year-old woman developed pityriasis rosea during her eighth week of pregnancy. Her husband had pityriasis rosea two months earlier. PubMed was searched for the following terms: conjugal, craniosynostosis, newborn, pityriasis, pregnancy, rosea, sagittal, spouse. The papers were reviewed and the references cited were evaluated.

Results: Our patient delivered a healthy male infant after 41 weeks of gestation. He had normal weight, height, and Apgar scores. Isolated sagittal craniosynostosis was diagnosed and was successfully treated at nine weeks after birth without complications.

Conclusion: Several retrospective studies have investigated the possibility of adverse outcomes in infants born to women who developed pityriasis rosea during pregnancy, such as stillbirth, low gestational weight, hypotonia, and premature delivery. However, there are also reports of healthy newborns in women who have had pityriasis rosea during gestation. Our patient carried the fetus one week post-term and delivered a healthy boy via C-section; isolated sagittal craniosynostosis was later diagnosed and successfully repaired. The occurrence of craniosynostosis in a woman who developed pityriasis rosea during her first trimester of pregnancy may be two coincidental events.
Introduction

Pityriasis rosea is considered to be a benign cutaneous condition [1-4]. However, in the setting of pregnancy, adverse effects on the newborn may be observed [5,6]. Craniosynostosis is a congenital abnormality, which can occur as an isolated finding or as part of a syndrome with other associated features [7,8]. A woman who developed pityriasis rosea during her first trimester of pregnancy and who subsequently delivered a healthy baby with craniosynostosis is described, and observations of infants born to women who are diagnosed with pityriasis rosea during their gestation are summarized.

Case report

A 28-year-old healthy woman presented at 10 weeks gestation with a skin rash. Two weeks earlier, at eight weeks gestation, she had noticed an initial skin lesion on her abdomen (Figure 1). Shortly thereafter, she began to develop new lesions on her abdomen and back.

Her husband, a 29-year-old man, had presented two months earlier with similar-appearing annular lesions on his neck (Figure 2). A larger lesion had initially appeared on his left neck. Within the next five days, additional lesions appeared on the remainder of his neck and subsequently, a few lesions appeared on his distal upper extremities. A diagnosis of inverse pityriasis rosea was established based on the clinical history and lesion morphology. His lesions resolved
consultation confirmed the diagnosis; at 9 weeks postpartum, endoscopic repair was performed successfully with no adverse sequelae.

Discussion

Pityriasis rosea classically presents as annular plaques with peripheral scale, typically located between the neck and the groin, and may be seasonal in occurrence [2,3,9]. Less commonly, it can present with lesions on the neck and extremities (inverse pityriasis rosea) [10-11] or during pregnancy [5,6,12,13].

The pathogenesis of pityriasis rosea remains to be definitively established. However, associations with human herpes virus (HSV)-6 and HSV-7 have been observed [14-18]. Several studies have found that patients with pityriasis rosea have higher levels of HSV-6 and HSV-7 detected in their skin, suggesting that infection by these viruses may have a causal effect on the development of pityriasis rosea.

Occasionally, pityriasis rosea has been documented in siblings or in spouses (Table 1) [19-21]. In these circumstances,
Several retrospective studies have observed adverse events affecting the newborn in women who develop pityriasis rosea during pregnancy (Table 2) [6,14,22]. In these individuals, the dermatosis lasted 3 to 13 weeks. The adverse events predominantly included stillbirth at 11 to 28 weeks (median 16 weeks), premature delivery (<37 weeks), hypotonia, weak motion, and low birth weight. Less common adverse effects were hydramnios and foramen ovale. Apgar scores ranged from 6 to 9.

Some investigators have discovered that pityriasis rosea occurring earlier in pregnancy, such as in the first trimester, have been more often associated with a poorer prognosis, compared to women who developed the dermatosis during the second or third trimesters [6]. However, our review of the literature showed that the majority of women (16/25, 64%) who experienced adverse events had the onset of pityriasis rosea that occurred during the second trimester. The onset of pityriasis rosea occurred during the first trimester in 9 women (36%) and none in the third trimester.

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Individual case reports, including the patient in this report, have described 29 women who developed pityriasis rosea during pregnancy (Table 2) [6,14,22]. In these individuals, the dermatosis lasted 3 to 13 weeks. The adverse events predominantly included stillbirth at 11 to 28 weeks (median 16 weeks), premature delivery (<37 weeks), hypotonia, weak motion, and low birth weight. Less common adverse effects were hydramnios and foramen ovale. Apgar scores ranged from 6 to 9.

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Additional studies looking at the association between HSV-6 and HSV-7 DNA and the occurrence of pityriasis rosea in pregnancy have also been performed [13,14,17,18]. Some of the studies found reactivation of HSV-6 during pregnancy. However, a positive correlation between viral infection and clinical features of pityriasis rosea was not established [17,18].

### Table 1. Pityriasis rosea in spouses: summary of patient features. [Copyright: ©2016 Loh et al.]

| Ca | FOI | OIS | HA | HL | HDur | WA | WL | WDur | Recur | Ref |
|----|-----|-----|----|----|------|----|----|------|-------|----|
| 1  | H   | 7 d | 40 | 4x2 cm oval patch on RLQ abdomen | 10 d; Tx ND | 36 | • 30x10 cm patch R flank | 3 wk; Tx ND | No  | 20 |
| 2  | ND  | ND  | ND | Neck, upper limbs | 4 wk, no Tx | 28 | Neck, chest, thighs, upper limbs | 4 wk, no Tx | No  | 19 |
| 3  | H   | 1 y | ND | Trunk | ND  | 34 | Upper trunk, ribs [a] | Maximum 6 wk per episode | Yes [b] | 21 |
| 4  | H   | 2 mo | 29 | Neck, distal upper limbs | 2 wk, TAC BID | 28 | Abdomen, back | 10 wk, cetaphil cream | No  | CR |

BID=twice daily; C=couples; Ca=case; CR=current report; d=days; FOI=first occurred in; H=husband; HA=husband's age in years at onset of pityriasis rosea; HDur=duration in husband; HL=husband's location of lesion(s); mo=months; ND=not described; OIS=onset in spouse; Recur=recurrence of pityriasis rosea; RLQ=right lower quadrant; TAC=triamcinolone cream 0.1%; Tx=treatment; WA=wife's age in years at onset of pityriasis rosea; WL=wife's location of pityriasis rosea lesion(s); WDur=duration in wife; wk=weeks; y=years

[a] Distribution of the lesions was only described for the last recurrence
[b] The woman had 4 recurrences, one per year; each recurrence occurred in the spring

the skin eruption may occur sequentially. Our patient’s husband developed and cleared inverse pityriasis rosea two months prior to his wife developing classic pityriasis rosea. Similar to our patient, in the majority of cases of pityriasis rosea occurring in couples, the lesions appeared in the husband prior to the wife (Table 1). The interval between onset of pityriasis rosea in the wife after occurrence in the husband ranged from seven days to one year (median: 2 months). One woman had recurrence of pityriasis rosea each sequential year in the spring [21].

Our review of the literature, including the patient in this report, discovered 54 women who developed pityriasis rosea during their pregnancy (Table 2) [6,14,22] and Table 3 [6,12-14,23,24]). The onset of pityriasis rosea ranged from week 8 of gestation (3 patients: cases 7 and 8 in Table 2 and case 14 in Table 3) to week 32 (1 patient: case 7 in Table 3). The median number of weeks of pregnancy at the onset of pityriasis rosea was 19.

An equal number of women were either uniparous or multiparous. Twenty-five women—ages 24 to 34 (median age 29)—had no prior pregnancies. However, pityriasis rosea occurred during either the second (20 women) or the third pregnancy (6 women) for the other women.

Most of the women (66%, n=35) developed pityriasis rosea during the second trimester of gestation (13-28 weeks). Nineteen percent (10 women) had the onset of their dermatosis during the first trimester (0-12 weeks). Only 10% (5 women) experienced it in the third trimester (29-40 weeks).
TABLE 2. Adverse outcomes in infants born to women who developed gestational pityriasis rosea during pregnancy [Copyright: ©2016 Loh et al.]

| Case | A  | #PP | O   | Dur | Symptoms* | Loc                      | Del*          | Newborn weight (g)# | Apgar score | OAE                  | Ref |
|------|----|-----|-----|-----|-----------|--------------------------|---------------|---------------------|-------------|---------------------|-----|
| 1    | 24 | 1   | 6   | 3   | ND        | Thorax, scattered over body | 28            | Stillbirth, 2325 at |            | ND                  | 22  |
| 2    | 25 | 0   | 18  | 5   | No        | Lower L, T (<50%)          | 36            | 3000                | 7           | Weak motion         | 14  |
| 3    | 25 | 0   | 19  | 6   | No        | L, T (<50%)                | 35            | 2700                | 7           | Hypotonia           | 14  |
| 4    | 26 | 0   | 25  | 5   | Yes       | T (<50%)                  | 36            | 2950                | 8           |                     | 6   |
| 5    | 27 | 0   | 19  | 8   | Yes       | L, T (>70%)                | 32            | 1900                | 8           | Hypotonia           | 14  |
| 6    | 27 | 0   | 19  | 5   | No        | Lower L, T (<50%)          | 34            | 2600                | 6           | Hypotonia, weak motion | 14 |
| 7    | 28 | 0   | 8   | 9   | Yes       | L, T                      | 11            | Abortion            | NA          |                     | 6   |
| 8    | 28 | 0   | 8   | 11  | Yes       | L, T                      | 11            | Stillborn           | NA          |                     | 14  |
| 9    | 28 | 0   | 9   | 10  | Yes       | L, T                      | 17            | Stillborn           | NA          |                     | 14  |
| 10   | 28 | 1   | 10  | 6   | Yes       | L, T                      | 12            | Stillborn           | NA          |                     | 14  |
| 11   | 29 | 1   | 12  | 11  | Yes       | L, T                      | 16            | Stillborn           | NA          |                     | 14  |
| 12   | 29 | 1   | 16  | 4   | No        | T (<50%)                  | 36            | 2950                | 7           | Hypotonia           | 14  |
| 13   | 29 | 0   | 15  | 9   | No        | L, T                      | 34            | 2100                | 8           | Weak motion         | 14  |
| 14   | 30 | 1   | 11  | 10  | Yes       | L, T (>70%)               | 18            | Stillborn           | NA          |                     | 14  |
| 15   | 30 | 1   | 11  | 13  | Yes       | L, T                      | 12            | Stillborn           | NA          |                     | 14  |
| 16   | 30 | 0   | 16  | 9   | Yes       | L, T                      | 38            | 3100                | 9           | Hydramnios          | 14  |
| 17   | 31 | 1   | 15  | 6   | No        | T (<50%)                  | 38            | 2800                | 8           | Hypotonia, foramen ovale | 14 |
| 18   | 31 | 2   | 19  | 4   | No        | Lower L, T (<50%)         | 36            | 3100                | 8           | Foramen ovale       | 14  |
| 19   | 31 | 1   | 20  | 5   | No        | Lower L, T (<50%)         | 35            | 2900                | 6           | Hypotonia           | 14  |
| 20   | 32 | 0   | 10  | 11  | Yes       | L, T                      | 16            | Stillborn           | NA          |                     | 14  |
| 21   | 32 | 2   | 15  | 8   | Yes       | L, T (>70%)               | 17            | Stillborn           | NA          |                     | 14  |
| 22   | 32 | 2   | 18  | 8   | Yes       | L, T                      | 39            | 2900                | 9           | Hydramnios          | 14  |
| 23   | 33 | 1   | 14  | 9   | No        | L, T                      | 33            | 2100                | 7           | Hypotonia           | 14  |
| 24   | 34 | 1   | 14  | 9   | No        | T                         | 38            | 3000                | 8           | Hypotonia, hydramnios | 14 |
| 25   | 34 | 1   | 18  | 8   | No        | Upper L, T (<50%)         | 34            | 2650                | 8           |                     | 6   |

*Constitutional symptoms (i.e., other than cutaneous symptoms) including fatigue, headache, insomnia, gastrointestinal disturbance, inability to concentrate.

C=case; A=mother’s age at onset of pityriasis rosea; #PP=number of previous pregnancies; Loc=location; L=limbs; T=trunk; ND=not described; O=onset of pityriasis (weeks in pregnancy); Dur=duration of pityriasis rosea (weeks); L=location of lesions; Del=delivery (weeks in pregnancy); OAE=other adverse events

* Premature <37 weeks [a]
# Low birth weight <2500g [b]

[a] “Preterm birth.” World Health Organization. http://www.who.int/mediacentre/factsheets/fs363/en/ Date of access: 13 Dec. 2015.
[b] “Pediatric and Pregnancy Nutrition Surveillance System: PedNSS Health Indicators.” Center of Disease and Control. http://www.cdc.gov/pednss/what_is/pednss_health_indicators.htm. Date of access: 13 Dec. 2015.
## TABLE 3. Healthy infants born to mothers who developed pityriasis rosea during pregnancy.

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| Case | A   | #PP | O | Dur | Symptoms* | Loc | Del | Newborn weight (g)# | Apgar score | Ref  |
|------|-----|-----|---|-----|-----------|-----|-----|---------------------|-------------|------|
| 1    | 24  | 1   | 21| 6   | No        | T (<50%)| 38  | 3900                | 10          | 6    |
| 2    | 25  | 0   | 24| 6   | No        | Lower L, T (<50%)| 38 | 3250                | 9           | 6    |
| 3    | 26  | 0   | 24| 4   | No        | Lower L, T (<50%)| 40 | 3850                | 9           | 6    |
| 4    | 26  | 0   | 26| 5   | Yes       | Lower L, T (<50%)| 39 | 3700                | 9           | 6    |
| 5    | 26  | 0   | 30| 6   | No        | T (<50%)| 41  | 3800                | 8           | 6    |
| 6    | 27  | 0   | 24| 5   | No        | T (<50%)| 39  | 3400                | 10          | 6    |
| 7    | 27  | 0   | 32| 5   | No        | L, T (<50%)| 38 | 3900                | 10          | 6    |
| 8    | 28  | 1   | 13| 5   | Yes       | T (<50%)| 39  | 3650                | 9           | 6    |
| 9    | 28  | 2   | 21| 5   | No        | T (<50%)| 39  | 3000                | 9           | 6    |
| 10   | 28  | 0   | 21| 10  | No        | T, proximal aspects of four extremities | ND, uneventful | ND  | ND                  | 12          |
| 11   | 28  | 0   | 23| 5   | No        | T (<50%)| 38  | 3100                | 8           | 6    |
| 12   | 28  | 0   | 26| 4   | No        | T (<50%)| 38  | 3800                | 10          | 6    |
| 13   | 28  | ND  | ND| last trimester | ND | ND | R hip, bilateral thighs | ND, uneventful | ND  | ND                  | 13          |
| 14   | 28  | 0   | 8 | 10  | No        | T      | 41  | 3827                | 9           | CR   |
| 15   | 29  | 0   | 26| 6   | Yes       | T (<50%)| 37  | 3200                | 8           | 6    |
| 16   | 29  | 1   | 28| 5   | No        | T (<50%)| 41  | 3600                | 9           | 6    |
| 17   | 30  | 1   | 26| 4   | No        | L, T 50%| 38  | 3600                | 9           | 6    |
| 18   | 30  | 1   | 26| 4   | No        | T (<50%)| 39  | 3500                | 10          | 6    |
| 19   | 30  | 1   | 29| 5   | No        | T (<50%)| 37  | 3000                | 8           | 6    |
| 20   | 30  | 0   | 29| 6   | No        | Upper L, T (<50%)| 37 | 3100                | 8           | 6    |
| 21   | 30  | 1   | 30| 4   | No        | Lower L, T (<50%)| 38 | 3400                | 9           | 6    |
| 22   | 31  | 2   | 14| 4   | No        | T (<50%)| 38  | 3300                | 10          | 6    |
| 23   | 31  | 1   | 24| 5   | Yes       | Lower L, T (<50%)| 38 | 2750                | 7           | 14   |
| 24   | 31  | 1   | 26| 5   | No        | Lower L, T (<50%)| 38 | 3300                | 8           | 6    |
| 25   | 32  | 0   | 26| 5   | No        | T (<50%)| 38  | 3250                | 8           | 6    |
| 26   | 33  | 0   | 11| 8   | No        | T, proximal aspects of four extremities | ND, full-term | 2640 | ND                  | 12          |
| 27   | 33  | 2   | 23| 4   | No        | T (<50%)| 39  | 3200                | 9           | 6    |
| 28   | ND  | ND  | ND| ND  | ND        | ND    | ND  | ND                  | ND          | 23   |
| 29   | ND  | ND  | ND| ND  | ND        | ND    | ND  | ND                  | ND          | 24   |

*Constitutional symptoms (i.e., other than cutaneous symptoms) including fatigue, headache, insomnia, gastrointestinal disturbance, inability to concentrate.

C=case; A=mother’s age at onset of pityriasis rosea; #PP=number of previous pregnancies; Loc=location; L=limbs; T=trunk; ND=not described; O=onset of pityriasis (weeks in pregnancy); Dur=duration of pityriasis rosea (weeks); Loc=location of lesions; Del=delivery (weeks in pregnancy)

Premature <37 weeks [a]

# Low birth weight <2500g [b]

[a] "Preterm birth." World Health Organization. http://www.who.int/mediacentre/factsheets/fs363/en/ Date of access: 13 Dec. 2015.

[b] "Pediatric and Pregnancy Nutrition Surveillance System: PedNSS Health Indicators." Center of Disease and Control. http://www.cdc.gov/pednss/what_is/pednss_health_indicators.htm. Date of access: 13 Dec. 2015.
Pityriasis rosea also occasionally occurs in women during pregnancy. However, the true incidence is not known, since gestational pityriasis rosea is not frequently reported. Some researchers noted that pityriasis rosea occurring earlier in pregnancy had a greater probability of resulting in adverse events for the fetus, including stillbirth, low gestational weight, hypotonia, and/or premature delivery. However, there are a similar number of reports of women who developed pityriasis rosea during their gestation and delivered normal newborns. Indeed, the ratio of normal to abnormal newborns was found to be 29:25. Our patient developed pityriasis rosea during her first trimester beginning at 8 weeks gestation and lasting through 18 weeks. Her son was carried to term and delivered at 40 weeks and 6 days with Apgar scores, weight, and height in normal range. Isolated craniosynostosis was discovered and subsequently repaired. Whether the presence of craniosynostosis was associated with our patient’s development of pityriasis rosea during her pregnancy remains to be determined.

### References

1. Wollenberg A, Eames T. Skin diseases following a Christmas tree pattern. Clin Dermatol 2011;39:189-94. PMID 21396559. DOI: 10.1016/j.clindermatol.2010.09.011.
2. Neoh CY, Tan AW, Mohamed K, Sun YJ, Tan SH. Characterization of the inflammatory cell infiltrate in herald patches and fully developed eruptions of pityriasis rosea. Clin Exp Dermatol 2010;35:300-4. PMID: 19663842. DOI: 10.1111/j.1365-2230.2009.03469.x.
3. Sharma L, Srivastava K. Clinicoepidemiological study of pityriasis rosea. Indian J Dermatol Venereol Leprol 2008;74:647-9. PMID: 19171994.

### TABLE 4. Syndromes associated with craniosynostosis [25,26]

| Syndrome [a]          | Features/Comment                                                        |
|-----------------------|-------------------------------------------------------------------------|
| Apert syndrome        | Brachycephaly, flat nasal bridge, syndactyly of fingers (“mitten fingers”), syndactyly of toes |
| Crouzon syndrome      | Long face with proptosis, maxillary hypoplasia, mandibular prognathism, conductive hearing loss. Associated with increased paternal age. Synostosis may involve the coronal, sagittal, and lambdoid sutures. Can also present with acanthosis nigricans. |
| Pfeiffer syndrome     | Hypertelorism, maxillary hypoplasia, mandibular prognathism, turritbrachycephaly. Partial syndactyly of fingers and toes. May have choanal atresia or stenosis or radiohumeral synostosis at elbows |
| Saethre-Chotzen syndrome | Short stature, brachycephaly, acrocephaly, plagiocephaly, facial asymmetry, hypertelorism, beaked nose, deafness, cardiac defect. |
| Carpenter syndrome    | Brachycephaly with synostosis of coronal, lambdoid, and sagittal sutures. Midface hypoplasia, low-set ears, high arched palate, coxa valgum, genu valgum, polydactyly/syndactyly/clinodactyly/camptodactyly. |

[a] These are the syndromes most frequently associated with craniosynostosis. Other less common associated syndromes associated with craniosynostosis include: Antley-Bixler, craniofrontonasal dysplasia, craniosynostosis mental retardation syndrome of Lin and Gettig, cutis gyrata syndrome of Beare and Stevenson, cytochrome P450 oxidoreductase deficiency with Antley-Bixler phenotype, Hunter-McAlpine craniosynostosis, Jackson-Weiss, Muenke, and Baller-Gerold, Opitz trigonocephaly, and Shprintzen-Goldberg craniosynostosis.
4. González LM, Allen R, Janniger CK, Schwartz RA. Pityriasis rosea: an important papulosquamous disorder. Int J Dermatol 2005;44:757-64. PMID: 16135147. DOI: 10.1111/j.1365-4632.2005.02635.x.
5. Bianca S, Ingegnosi C, Ciancio B, Gullotta G, Randazzo L, Ettere G. Pityriasis rosea in pregnancy. Reprod Toxicol 2007;24:277-8. PMID: 17604600. DOI: 10.1016/j.reprotox.2007.05.005.
6. Drago F, Broccolo F, Zaccaria E, et al. Pregnancy outcome in patients with pityriasis rosea. J Am Acad Dermatol 2008;58:787-83. PMID: 18489054. DOI: 10.1016/j.jaad.2007.05.030.
7. Governale LS. Craniosynostosis. Pediatr Neurol 2015;pii:S0887-8994. PMID: 26371995. DOI: 10.1016/j.pediatrneurol.2015.07.006.
8. Heuzé Y, Holmes G, Peter I, Ritschmeier JT, Jabs EW. Closing the gap: genetic and genomic continuum from syndromic to nonsyndromic craniosynostoses. Cur Genet Med Rep 2014;2:135-45. PMID: 26146596. DOI: 10.1007/s40142-014-0042-x.
9. Stulberg DL, Wolfrey J. Pityriasis rosea. Am Fam Physician 2004;69:87-91. PMID: 14727822. DOI: 10.1016/j. jpag.2006.12.005.
10. Trager JD. What is your diagnosis? Scaly pubic plaques in a 2-year-old girl—or an "inverse" rash. J Pediatr Adolesc Gynecol 2007;20:109-11. PMID: 17418397.
11. Chuh A, Zawar V, Lee A. Atypical presentations of pityriasis rosea: case presentations. J Eur Acad Dermatol Venereol 2005;19:120-6. PMID: 15649208. DOI: 10.1111/j.1468-3083.2004.01105.x.
12. Chuh AA, Lee A, Chan PK. Pityriasis rosea in pregnancy—specific diagnostic implications and management considerations. Aust N Z J Obstet Gynaecol 2005;45:252-3. PMID: 15904457. DOI: 10.1111/j.1479-828X.2005.00399.x.
13. Cruz MJ, Baudrier T, Azevedo F. Atypical pityriasis rosea in a pregnant woman: first report associating local herpes simplex virus 2 reactivation. J Dermatol 2012;39:490-2. PMID: 21958020. DOI: 10.1111/j.1346-8138.2011.01349.x.
14. Drago F, Broccolo F, Javor S, Drago F, Rebora A, Parodi A. Evidence of human herpesvirus-6 and -7 reactivation in miscarrying women with pityriasis rosea. J Am Acad Dermatol 2014;71:198-9. PMID: 24927696. DOI: 10.1016/j.chemosphere.2014.04.107.
15. Broccolo F, Drago F, Careddu AM, et al. Additional evidence that pityriasis rosea is associated with reactivation of human herpesvirus-6 and -7. J Invest Dermatol 2005;124:1234-40. PMID: 15955099. DOI: 10.1111/j.0022-202X.2005.23719.x.
16. Watanabe T, Kawamura T, Jacob SE, et al. Pityriasis rosea is associated with systemic active infection with both human herpesvirus-7 and human herpesvirus-6. J Invest Dermatol 2002;119:793-7. PMID: 12406322. DOI: 10.1046/j.1523-1747.2002.00200.x.
17. Ohashi M, Yoshikawa T, Ihara M, et al. Reactivation of human herpesvirus 6 and 7 in pregnant women. J Med Virol 2002;67:354-8. PMID: 12116027. DOI: 10.1002/jmv.10083.
18. Dahl H, Fjaertoft G, Norsted T, Wang EZ, Mousavi-Jazi M, Linde A. Reactivation of human herpesvirus 6 during pregnancy. J Infect Dis 1999;180:2035-8. PMID: 10558965. DOI: 10.1086/315115.
19. Lemster N, Neumark M, Arieh I. Pityriasis rosea in a woman and her husband—case report and review of the literature. Case Rep Dermatol 2010;2:135-9. PMID: 21399750. DOI: 10.1159/ 000319759.
20. Miller TH. Pityriasis rosea: report of three cases in one family, with clinical variations in two of them. AMA Arch Derm Syphilol 1941;44:44-66.8.
21. Halkier-Søresnsen L. Recurrent pityriasis rosea. New episodes every year for five years. A case report. Acta Derm Venereol 1990;70:179-80. PMID: 1969211.
22. Overton RW. Pityriasis rosea in pregnancy: a case report. J Iowa Med Soc 1969;58:1239-40. PMID: 5705310.
23. Salin RW, Curtis AC, Wheeler A. The treatment of pityriasis rosea with convalescent plasma, gamma globulin, and pooled plasma. AMA Arch Dermatol 1957;76:659-62. PMID: 13468800.
24. Zeligman I. Cortisone therapy for pruritic pityriasis rosea. Bull School of Medicine, University of Maryland. 1955;40:76-7. PMID: 1438900.
25. GeneReviews: FGFR-Related Craniosynostosis Syndromes http://www.ncbi.nlm.nih.gov/books/NBK1455/. Accessed on 10 Jan. 2016.
26. Panigrahi I. Craniosynostosis genetics: the mystery unfolds. Indian J Hum Genet 2011;17:68-73. PMID: 22090712. DOI: 10.1007/s40142-014-0042-x.
27. Massimi L, Caldarelli M, Tamburrini G, Paternoster G, Di Rocco C. Isolated sagittal craniosynostosis: definition, classification, and surgical indications. Childs Nerv Syst 2012;28:1311-7. PMID: 22872242. DOI: 10.1007/s00381-012-1834-5.
28. Epidemiology of nonsyndromic craniosynostosis in children: incidence and prevalence. (Updated 2015). Retrieved 10 Jan. 2016, from http://ispn.guide/book/The%20ISPN%20Guide%20to%20Pediatric%20Neurosurgery/Congenital%20Disorders%20of%20the%20Nervous%20System/Non%20syndromic%20Craniosynostosis/epidemi