# BASAL CELL NEVUS SYNDROME A CASE REPORT

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## ABSTRACT

The basal cell nevus syndrome is a multisystem disorder inherited in an autosomal dominant manner with marked penetrance and variable expression. Originally defined as the triad of nevoid basal cell carcinomas, jaw cysts, and skeletal anomalies. The syndrome complex has since been greatly expanded to include a variety of other organ system abnormalities. We recently had the opportunity to discover a family with this syndrome while evaluating a patient with atopic eczema, and describing hypopneumatization of mastoid antrum, as an associated finding in this syndrome which has not been documented before.

## INTRODUCTION

Basal cell nevus sysdrome (nevoid basal cell carcinoma syndrome, Gorlin-Goltz syndrome, hereditary cutaneomandibular polyoncosis) had been recognized during the hundred years since the first cases were described by Jarisch and White. It is a rare and complex disease with multiple manifestations. The patients show characteristic facies, which together with enlarged calvaria may lead the clinician to search for the basal cell nevus syndrome very early in life, even in the absence of an indicative family history.

Although the syndrome has been well defined for over 25 years, many clinicians are familiar only with its major manifestations, such as multiple basal cell carcinomata, jaw cysts, and skeletal abnormalities. This report, we present a patient coming with atopic eczema, after closed evaluation and further investigations disclosed multisystem abnormalities of the basal cell nevus syndrome.

## CASE REPORT ;

PATIENT ; A 33-year-old Thai female

PRESENT ILLNESS ; The patient came to the dermatologic clinic for evaluation of mild atopic eczema. She had a past history of undergoing excision of epidermoi inclusion cyst in March 1994.

PHYSICAL EXAMINATION ; The physical examination showed mild atopic eczema at dorsum of left hand. In addition, there were erythematous lichenified papules and plaques on lateral side of neck, flexural surface of elbows and knees. She was noted to have frontal bossing with prominent supraorbital ridge. (Fig. 1). Head circumference measured 60 cm. & mild ocular hypertelorism is observed. Also seen were multiple discrete 1-2 mm. pits on non-inflammatory base distributed on the palms (Fig 2) with similar lesions on the soles.

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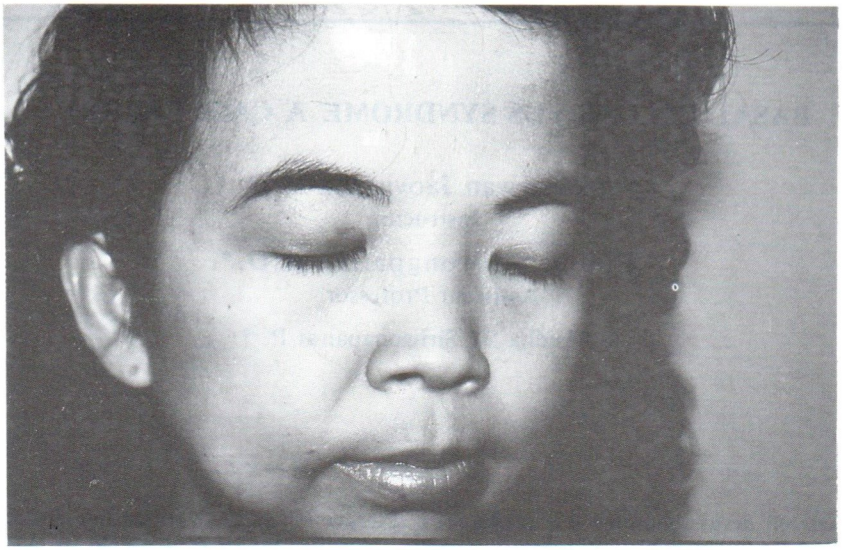

Fig.1 Photograph of the patient revealed frontal bossing with prominent supraorbital ridge

Fig.2 Photograph of the patient's palm showed numerous palmar pits

Careful evaluation of skin revealed no evidence of basal cell carcinoma, skin tags, or trichoepitheliomas. No reticulate pigmentation or nail abnormality is observed. Two pigmented nevi each were found on right arm and abdomen.

Physical chest examination reveals normal heart & lungs. Abdominal examination showed no abnormality. No palpable mass is noted. The patient showed no kyphosis or scoliosis while in standing position.

FAMILY HISTORY ; The patient's father had a history of malignancy (questionable carcinoma of nasal cavity or nasopharynx or paranasal sinus), and died at the age of 48.

No palmar pits in siblings but the patient's second sister had congenital heart disease.

The patient and siblings all have carius teeth with early tooth loss.

Her first child aborted and her second son was born with complete cleft lip, cleft palate, and strabismus (exotropia). Her son also has macrocephaly and attended the Pediatrics neurologic clinic but has normal develpment.

HISTOPATHOLOGY ; The histopathology revealed sharp demarcated area of relatively thin cornified granular and spinous layer of the epidermis from volar skin. The rete ridges are thin and increase in epidermal melamin.

Another slide showed cords, nests, and strands of uniform nevus cells (melanocytes) in the upper dermis.

## RADIOGRAPHIC FINDINGS ; (Fig. 3 - Fig. 14)

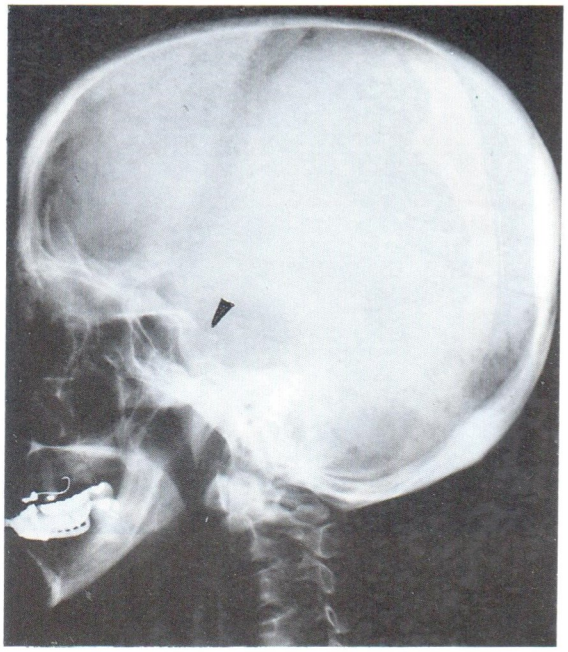

Fig.3 Film lateral skull revealed macrocephaly (increased craniofacial ratio), & bridging sella turcica

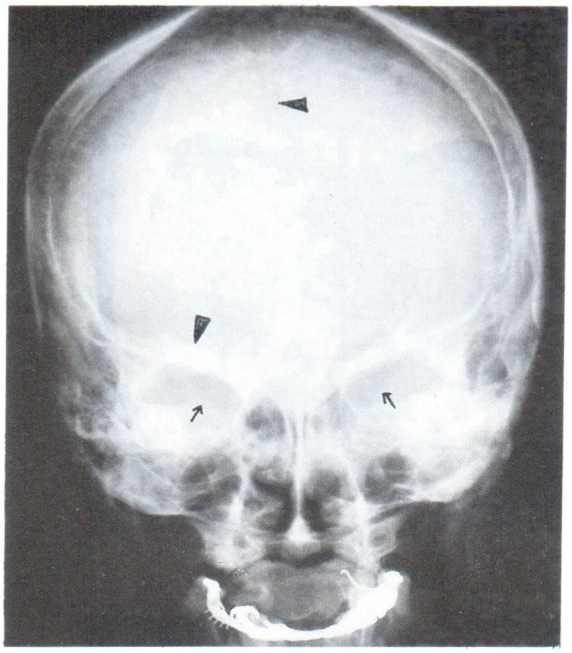

Fig.4 Film AP skull disclosed calcified falx cerebri (upper arrow), hyperostosis of Rt supraorbital ridge (mid level arrow), and symmetrical, abnormal widening of superior orbital fissures (lower small arrows)

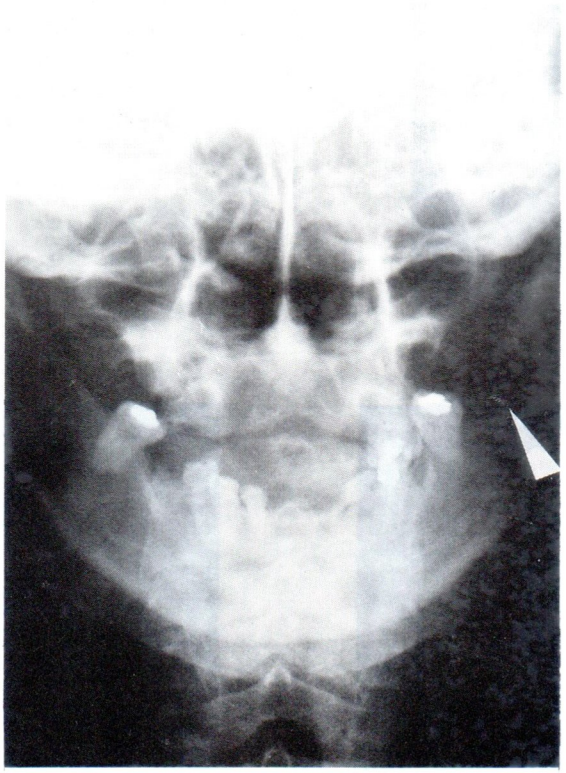

Fig.5 Film mandible revealed jaw cyst at Lt mandibular ramus

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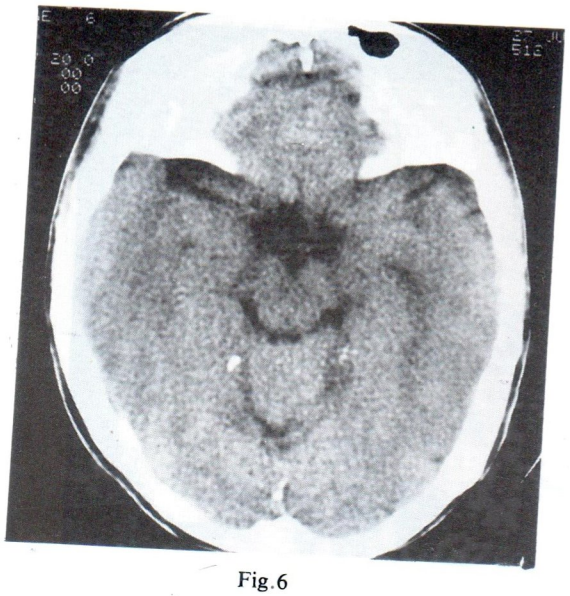

Fig.6

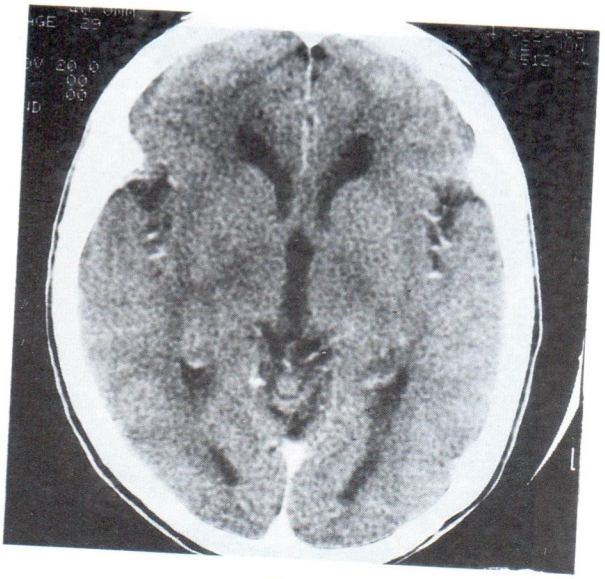

Fig.7

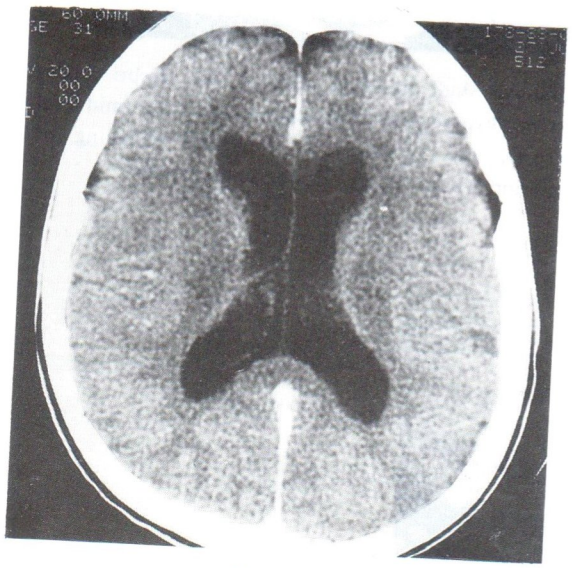

Fig. 8

Fig.6-10 CT scan of the brain
Fig.6 : calcified tentorium cerebelli
Fig.7-8 : symmetrical hydrocephalus
Fig.9 : calcified falx cerebri (lamellated calcification)
Fig.10 : hypopneumatized Lt mastoid antrum

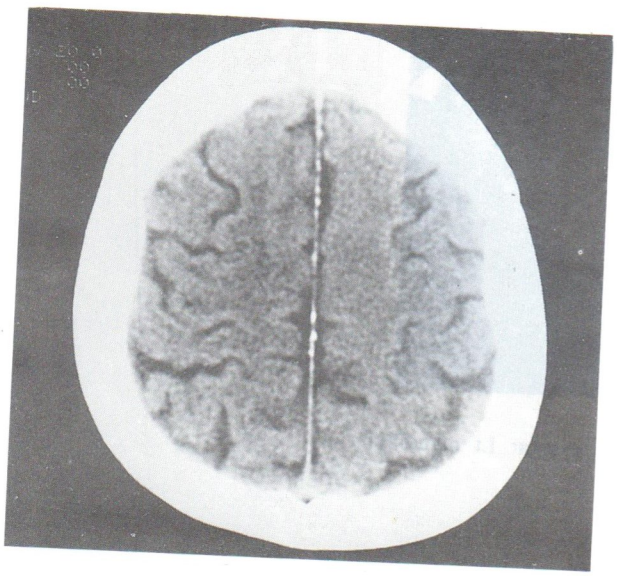

Fig.9

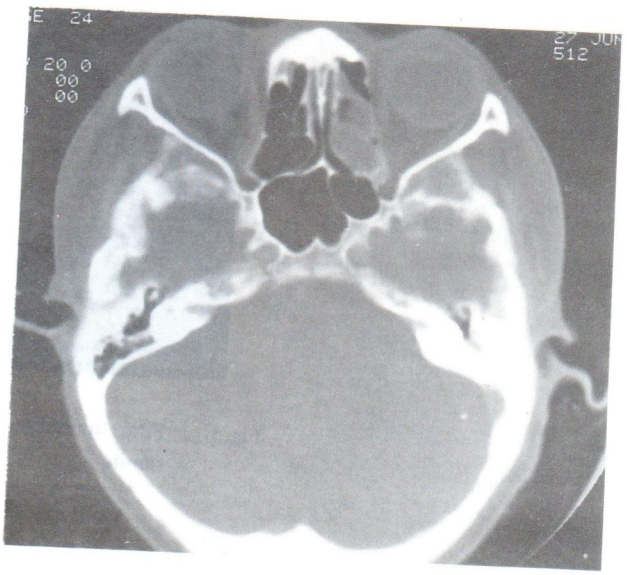

Fig.10

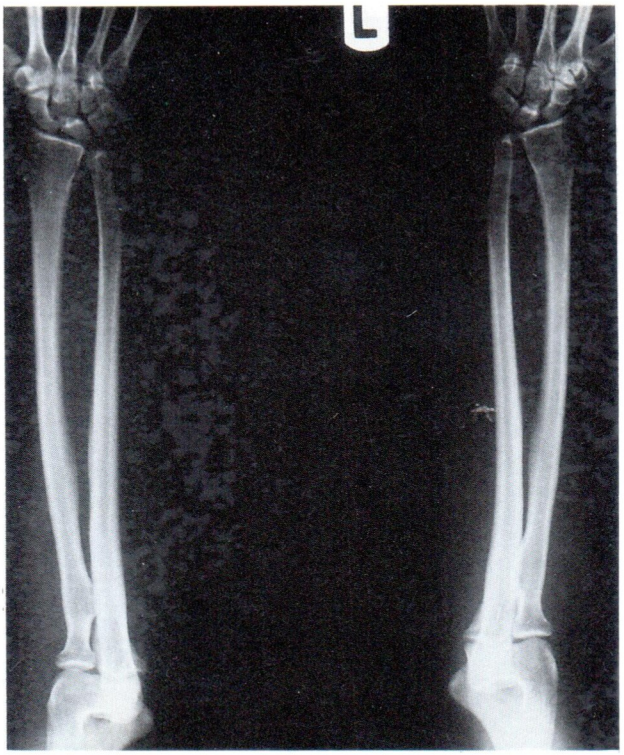

Fig.11 Film forearms showed midly deformed ulna bilaterally

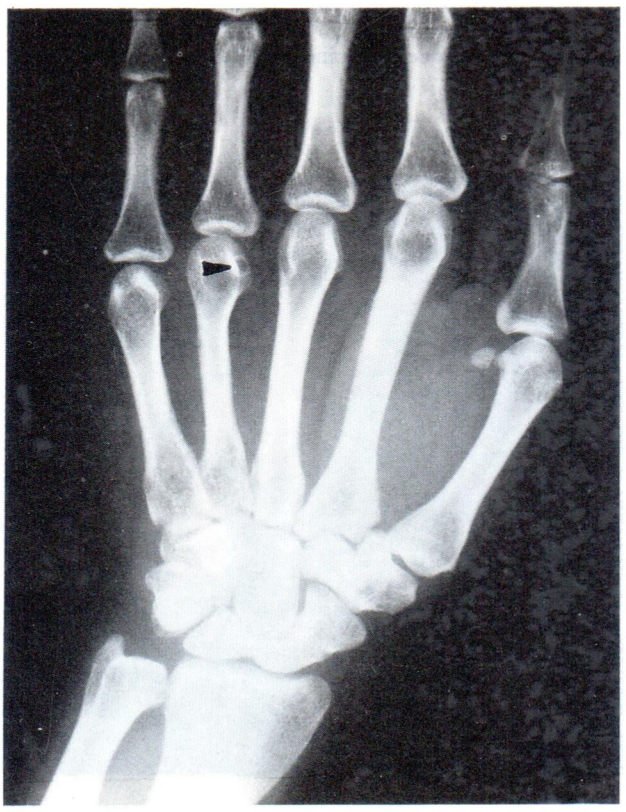

Fig.12 Film Rt. hand showed small bone cyst at 4th metacarpal head

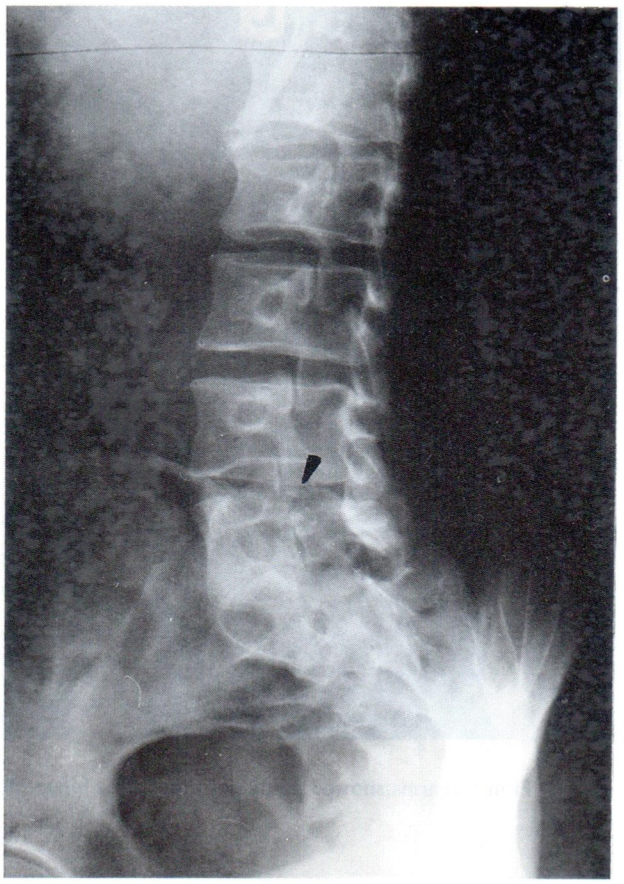

Fig.13 Film oblique L-S spine disclosed spondylolysis of L-5

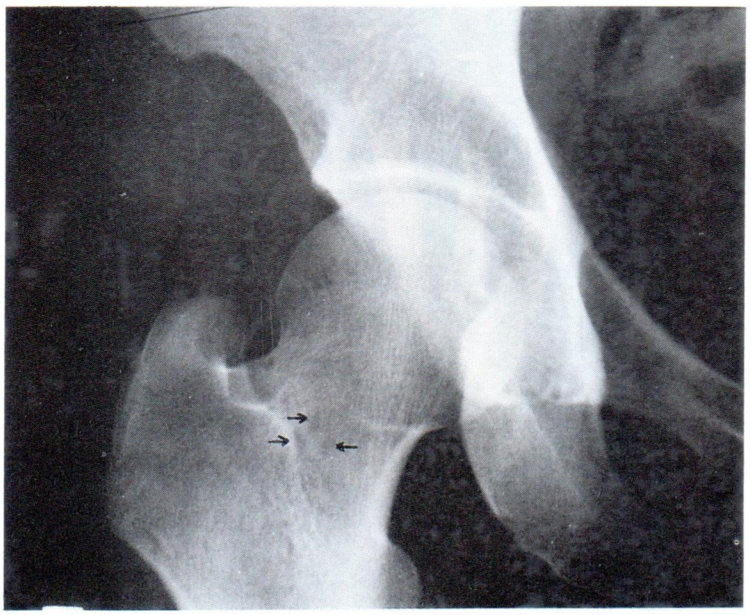

Fig.14 Film AP Rt. hip revealed multiple small bone cysts at Rt. femoral neck

## DISCUSSION

The basal cell nevus syndrome had variable expression and involving multiple organ systems.

TABLE 1. Diagnostic findings in adults with nevoid basal cell carcinoma syndrome (14)

| | |
|---|---|
| 50 % or greater frequency | 14 % or less |
| Enlarged haed circumference | Medulloblastoma (true frequency not known) |
| Mild ocular hypertelorism | Inguinal hernia |
| Multiple basal cell carcinoma | Meningioma |
| Odontogenic keratocysts of jaws | Lymphomesenteric cysts |
| Epidermal cysts of skin | Cardiac fibroma |
| Palmar and/or plantar pits | Fetal rhabdomyoma |
| Calcified ovarian cysts | Ovarian fibrosarcoma |
| (probable overestimated frequency) | Marfanoid build |
| Calcified falx cerebri | Agenesis of corpus callosum |
| Rib anomalies | Cyst of septum pellucidum |
| (splayed, fused, partially missing, bifid, etc.) | Cleft lip and/or cleft palate |
| Spina bifida occulta of cervical or thoracic vertebrae | Polydactyly, postaxial-hands or feet |
| Calcified diaphragma sella | Sprengel deformity of scapula |
| (bridged sella, fused clinoids) | Congenital cataract, glaucoma, coloboma of iris, retina, optic nerve, medullated retinal nerve fiberrs |
| Hyperpneumatization of paranasal sinuses | Subcutaneous calcification of skin |
| 49 to 15 %frequency | (possibly underestimated frequency) |
| Calcification of tentorium cerebelli and petroclinoid ligament | Minor kidney malformations |
| Short fourth metacarpals | Hypogonadism in males |
| Kyphoscoliosis or other vertebral anomalies | Mental retardation |
| Lumbarization of sacrum | |
| Pectus excavatum of carinatum | |
| Pseudocystic lytic lesion of bones (hamartomas) | |
| Strabismus (exotropia) | |

### SKIN

The syndrome is characterized by nevoid basal cell carcinomas, which appear largely between puberty and 35 years of age, although they have been reported to occur as early as 2 years of age. It has been estimated that about 2% of the patient younger than 45 years of age with basal cell carcinoma have the syndrome, in contrast to 22% of those younger than 19 years of age. Only about 15% of patients manifest the skin lesions before puberty, and about 10% of patients over the age of 30 years have no skin lesion, as we have seen in our patient who showed no basal cell carcinoma in the 33 years of her age. The lesions are pink or pale brown papules, may resemble moles, skin tags, nevi, or hemangioma and they may range in size from 1 to 10 mm in diameter. Epidermoid cysts (1 to 2 cm) occur on the limbs and trunk in over 50% of the cases. Before puberty the lesions are harmless, even huge numbers are present. Only a few become aggressive, and they are only after adolescence, when they may be locally invasive, behaving like ordinary isolated basal cell carcinoma. Death has resulted in a few instance from invasion of the brain, lung, or peritoneum. Only in the rare case has metastasis been documented.

About 65 % present small (1 to 2 mm) asymmetric palmar and/or plantar pits. There are several cases in which basal cell carcinomas have been arisen in the base of these pits.

### FACE

A characteristic facies is present in about 70 % of patients. This is due in part to increased size of the calvaria (occipitofrontal circumference, 60 cm or more in adult) due to frontal and biparietal bulging, well-developed supraorbital ridges, broadened nasal roots, low position of occiput, mild hypertelorism, exotropia, and exaggerated length of mandible associated with pouting of the lip.

Cleft lip and/or palate occur in about 5 % Congenital blindness due to corneal opacity, congenital or precoccious cataract or glaucoma and/or coloboma of iris, choroid, and optic nerve, with convertent or divergent strabismus and nystagmus, has been reported in 10-15 % of the patients.

## ODONTOGENIC KERATOCYSTS

Cysts of the jaws, developed during the first decade of life (usually after the seventh year) to peak during the second or third decades. 15 % of patients do not have radiographically demonstrable cysts by the age of 40. In spite of widespread extension throughout the jaws, almost never do they cause symptoms unless secondarily infected following surgery. Most often they are detected on routine dental check ups. Adjacent teeth may be occasionally loosened. Although rare, both ameloblastoma & squamous cell carcinoma have arisen in these jaw cysts.

Odontogenic keratocysts are found in over 80%, about 3 times as often in the mandible as in the maxilla. They may be small, single, or multiple, but more often are large, bilateral, unilocular or multilocular, and asymmetric, involving both jaws. They can displace the developing permanent teeth. Recurrent rate of the cysts. between 30% to 60% after treatment.

## CENTRAL NERVOUS SYSTEM

Medulloblastoma developing within the first 2 years of life has been described in several patients, in their sibs & offsprings. Accurate assessment is problematic since several patients have had their sibs or other relatives die during infancy from "brain tumour, but the estimated rate is about 20%. Meningioma & craniopharyngioma have also been described.

Mental retardation, has been reported in about 3% of cases. Calcified falx cerebri which appear early in life, is seen in about 85% (normal 5%). Calcification of the tentorium cerebelli (40%), petroclinoid ligaments (20%), dura, pia & choroid plexus is common. The sinuses are hyperpneumatized in 60% due to absence of intrasinusal septa. In our patient, she has hypopneumatization of left mastoid antrum which has not been described before, and is likely due to bony dysplasia for she had no history of otitis media. Bridging sella (calcification of the diaphragma sellae) is seen in at least 60-80% (normal 4%). The sella is amall and ofter asymmetric due to hyper-pneumatization of sphenoid bone. Platybasia, agenesis of corpus callosum, cysts of septum pellucidum, & congenital hydrocephalus have also been reported.

## MUSCULOSKELETAL SYSTEM

Patients may be very tall, some exhibiting marfanoid build. Skeletal anomalies are common. About 60% have anteriorly splayed, fused, partially missing, hypoplastic, or bifid ribs. Cervical ribs are frequent. Kyphoscoliosis with or without associated pectus excavatum or carinatum is present to some degree in about 30-40%, and spina bifida occulta of the cervical and thoracic vertebrae is found in 60%. Malformation at the occipito-vertebral junction are common. These included short atlas or foramen arcuale, less often agenesis of the odontoid process, the presence of a third occipital condyle, or basilar agenesis. Cervical or upper thoracic vertebral fusion or lack of segmentation has been documented in about 40%, as well as 40% incidence of lumbarization of sacrum.

There are various other bony anomalies : polydactyly of hands and feet, hallux valgus, syndactyly of second & thrid fingers. Sprengel deformity is found in 5-10%. Medial hooking or dysplasia of the lower scapula borders has been noted. Pes planus & defective medial portion of clavicle have also been described.

Small pseudocystic lytic bone lesion are noted in 35-45%, affecting many parts of bony skeleton. Spotted sclerotic osteopoikolytic lesions have also been documented. Subcutaneous calcification of fingers & scalp has been reported.

The fourth metacarpal bone is short in 15-45% (average 20%), but this sign is not diagnostic since many studies have shown that 10% of normal population have one or both short fourth metacarpal bones.

## GENITOURINARY SYSTEM

In males, there were reports of hypogonadism, anosmia, cryptorchism, female pubic escutcheon, gynecomastia and/or scanty facial or body hair. Seminoma has also been reported.

Frequently the female patients were documented to have ovarian fibromas. They may overlap near midline as a single calcified mass, simulating calcified uterine fibroid. The tumour are often not discovered unless they twisted. Ovarian fibrosarcoma has also been reported.

A variety of minor kidney malformations are noted ; horse-shoe kindney, L-shaped kidney, duplication of collecting system, renal agenesis.

## MESENTERY

There has been reports of chylous or lymphatic cysts of the mesentery, which if large, can cause painless movable mass in upper abdominal quadrants. Most cases have not produced sysptom and have been diagnosed at laparotomy. They sometimes show calcification.

## HEART

The isolated cardiac fibroma occur at all ages, but 85% are found in children less than 10 years old. It is solitary & can arises in many parts of the heart ; the interventricular septum, anterior wall of left ventricle, posterior wall of left ventricle, & right ventricle, in order of frequency.

The cardiac fibroma associted with the syndrome appeared no difference from the isolated tumour.

## NEOPLASM OF OTHER ORGANS

This syndrome has been associated with an increased tendency of various other neoplasia ; renal fibroma, adrenal cortical adenoma, bronchogenic cysts, fetal rhabdomyoma and rhadbomyosarcoma, leiomyoma, isolated neurofibroma, melanoma.

Fibrosarcoma of jaws have been reported, but probably secondary to radiation therapy.

In conclusion, we have presented a rare case of basal cell nevus syndrome, with multiorgan abormalities. The finding of hypopneumatization of mastoid antrum has not been described before. We planned to have periodic follow up & examination for this patient.

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