# A case of psoriasis with secondary amyloidosis, associated symbrachydactyly of the hand and a transverse deficiency of the foot

A. BALZANI<sup>1</sup>, A. PAGNOTTA<sup>2</sup>, G. MONTESI<sup>3</sup>, G. GRAVANTE<sup>4</sup>, F. NICOLI<sup>1</sup>, V. CERVELLI<sup>1</sup>

<sup>1</sup>Department of Plastic Surgery, School of Medicine, University of Tor Vergata, Rome (Italy)

<sup>2</sup>Department of Orthopedics, Israelitic Hospital, Rome (Italy)

<sup>3</sup>Department of Dermatology, Israelitic Hospital, Rome (Italy)

<sup>4</sup>Department of Colorectal Surgery, Pilgrim Hospital, Boston (United Kingdom)

**Abstract.** – Secondary amyloidosis is associated with a variety of chronic inflammatory diseases such as rheumatoid arthritis, ankylosing spondylitis, familial Mediterranean fever, osteomyelitis, inflammatory bowel diseases and infective or neoplastic conditions. Few cases of secondary amyloidosis complicating psoriasis have been reported. We describe a 58-year-old patient with secondary amyloidosis, psoriasis, an associated symbrachydactyly of the hand and a transverse deficiency of the foot. To the best of our knowledge, no case of this association has been previously reported.

Key Words:

Secondary amyloidosis, Psoriasis, Symbrachydactily, Congenital limb malformations.

#### Introduction

Amyloidosis is a disease derived from the accumulation of various insoluble amorphous fibrils in different tissues that may be idiopathic (primary amyloidosis) or associated with other inflammatory conditions (secondary amyloidosis). Among the others, dermatologic diseases have been described with this condition<sup>1</sup>, including psoriasis<sup>3-8</sup>. We describe the case a 58-year-old patient affected by secondary amyloidosis, psoriasis, symbrachydactyly of the hand and a transverse deficiency of the foot. To the best of our knowledge, this is the first report with this association.

### Case Report

A 58-year-old caucasian man with deformities of the left hand, left foot and a familial history of

psoriasis (grandmother) and renal amyloidosis (father and sister) was referred in 2005 to our Clinic for an evaluation of his dermatologic disease. His history began in October 1988 following a hospitalization for a severe episode of psoriatic erythroderma. At that time he received methotrexate (25 mg/week for one month), achieving a good clinical remission, and underwent maintenance therapy with corticosteroids, Psoralen and UVA rays. Five years later he was diagnosed with an asymptomatic nephrotic syndrome and a chronic renal failure on occasional blood checks. These diseases were initially suspected by the rise of serum creatinine (310 mmol/l), blood urea nitrogen (35 mmol/l), and further confirmed by the presence of heavy proteinuria (5.5 g/24 hours). At that time, the renal biopsy demonstrated the presence of amyloid substance in the kidneys making the diagnosis of an AA amyloidosis. No other symptoms of systemic amyloidosis were present. The electrocardiogram was normal. One year later the patient started haemodialysis on a three days per week schedule.

The examination of the left hand revealed a transverse deficiency with a "U-shaped" cleft. The digital absence was distal to the metacarpals and a central small finger nubbins with nail remnants were also present (Figure 1). The first carpal-metacarpal joints were normal for passive and active movements. The ulnar finger was deviated and had only one interphalangeal joint (as shown by the hand X-ray) (Figure 2) that did not show the possibility of active or passive movements. All these characteristics were suspicious for a symbrachydactyly. The examination of the left foot presented with a



**Figure 1.** Digital central absence in the left hand with nail remnants between a relatively normal thumb and little fingers. Well-demarcated red plaques with silvery scales on the skin.



**Figure 3.** Transverse amputation at the level of the left metatarsal level. White silvery scales on the skin.

congenital amputation at the level of the forefoot as part of a transverse deficiency (Figure 3). On the foot X-ray a fusion of the tarsal with metatarsal bones was observed but, despite this deformity, the patient had no difficulty in fitting footwear or walking. No further deformities were recorded in the shoulder girdle, the breast and the soft palate. Furthermore, no clinical symptoms or radiographic signs of arthritis were present. After three years from the first visit conducted in our Department, the patient is still on the same maintenance therapy for the



**Figure 2.** Left hand x-ray showing suppression of the index and middle fingers at the metacarpal level and suppression of the ring finger at the proximal interphalangeal joint. Arthritis is observed in the thumb's interphalangeal joint. The little finger has only one interphalangeal joint with a radial deformity.

psoriatic disease and on haemodialysis treatment scheduled three times per week. No further symptoms of the amyloidosis manifested over the years.

## Discussion

Secondary amyloidosis follows a variety of chronic inflammatory disorders<sup>2</sup> including different dermatoses<sup>1</sup>. Psoriasis has been described in association with amyloidosis<sup>3-8</sup>. In such cases, the peak incidence was in the 6<sup>th</sup> decade<sup>3-5</sup> with the cutaneous disease preceding the amyloidotic manifestations of approximately 12 years (range 2-30)<sup>4-5</sup>. The pathogenetic mechanisms involved the chronic inflammation and the use of steroids, immunosuppressive drugs or retinoids<sup>6</sup>. The most frequent amyloidotic manifestations were in the kidneys (50% of cases) and in the gastrointestinal tract<sup>4</sup>, while 29% of patients suffered of pustular psoriasis<sup>4,6-8</sup> and 86% of arthropathy<sup>6</sup>.

Our patient had a shorter interval between diagnoses (5 years) and a longer survival than those described in the literature<sup>4</sup>. All clinical characteristics were present, exception made for the arthritis and the pustular psoriasis. The renal biopsy diagnosed the correct cause of the nephrotic syndrome, but a gastrointestinal localization of the amyloidosis could not be excluded as no biopsy was performed due to the lack of specific symptoms. Even in our case the amyloidosis was thought to be the complication of a long-standing active psoriatic arthritis, as no chronic bacterial inflammation or other evidence of chronic illness was found. However, what was really new was the presence of symbrachydactyly. This was complex, involving not only soft tissues but also bones and nails, and was associated with brachydactyly. According to the literature, no direct relationship exists between psoriasis or secondary amyloidosis and symbrachydactyly. A similar case described the presence of epidermolysis bullosa dystrophica in association with psoriasis and amyloidosis<sup>9</sup>, but even in this patient the dermatologic condition produced the inflammation leading to the amyloidosis and the congenital limb anomalies were probably coincidental.

Syndactyly is a feature of more than 28 syndromes, including Poland (absence of the sternal head of the pectoralis major muscle, along with hypoplasia and/or aplasia of the breast or nipple, with deficiency of the subcutaneous fat and axillary hair)<sup>10</sup>, Apert (acrocephalosyndactyly)<sup>11</sup>, and Holt-Oram (abnormalities of the upper limbs and of the heart)<sup>12</sup>. We posed specific attention to examine the breasts, shoulder girdles and soft palate in order to exclude the EEC syndrome (Ectrodactyly, Ectodermic dysplasia and Cleft lip/palate)<sup>13</sup>. Our patient did not refer any of the typical craniofacial or heart problems, and excluded any familiarity for the syndromes. However, the possibility of a heritable amyloidosis could not be ruled out given the strong family history of amyloidosis and the impossibility to perform specific investigations on the other affected family members. In the last years, five human plasma prealbumin (transthyretin) variants were associated with the hereditary amyloidosis. Possibly in the future these methods will give the possibility to diagnose hereditary variants from "true" secondary amyloidosis in order to adopt more specific treatments according to the different disease types<sup>14</sup>.

#### References

- BROWNSTEIN MH, HELWIG EB. Systemic amyloidosis complicating dermatoses. Arch Dermatol 1970; 102: 1-7.
- HUSBY G, SLETTEN K. Chemical and clinical classification of amyloidosis 1985. Scand J Immunol 1986; 23: 253-265.
- SHARMA SC, MORTIMER G, KENNEDY S, THOMSON J. Secondary amyloidosis affecting the skin in arthropatic psoriasis. Br J Dermatol 1983; 108: 205-210.
- WITTENBERG GP, OURSLER JR, PETERS MS. Secondary amyloidosis complicating psoriasis. J Am Acad Dermatol 1995; 32: 465-468.
- AHMED Q, CHUNG-PARK M, MUSTAFA K, KHAN MA. Psoriatic spondyloarthropathy with secondary amyloidosis. J Rheumatol 1996; 23: 1107-1110.
- DAVID M, ABRAHAM D, WEINBERGER A, FEUERMAN EJ. Generalised pustular psoriasis, psoriatic arthritis and nephrotic syndrome associated with systemic amyloidosis. Dermatologica 1982; 165: 168-171.
- BERGER PA. Amyloidosis–a complication of pustular psoriasis. Br Med J 1969; 2(5653): 351-353.
- MACKIE RM, BURTON J. Pustular psoriasis in association with renal amyloidosis. Br J Dermatol 1974; 90: 567-571.
- MILNE B, ROSALES JK. Anaesthesia for the correction of oesophageal stricture in a patient with recessive epidermolysis bullosa dystrophica: case report. Canad Anaesth Soc J 1980; 27: 169-171.
- POLAND A. Deficiency of the pectoral muscles. Guy's Hospital Reports 1841; 6: 191-193.
- Apert ME. De l'acrocephalosyndactyly. Bull Soc Méd Hôp (Paris) 1906; 23: 1310-1330.
- HOLT M, ORAM S. Familial heart disease with skeletal malformations. Br Heart J 1960; 22: 236-242.
- BIXLER D, SPIVACK J, BENNETT J, CHRISTIAN JC. The ectrodactyly-ectodermal dysplasia-clefting (EEC) syndrome. Report of 2 cases and review of the literature. Clin Genet 1972; 3: 43-51.
- PICKEN MM. New insights into systemic amyloidosis: the importance of diagnosis of specific type. Curr Opin Nephrol Hypertens 2007; 16: 196-203.